The Pennsylvania State University Libraries Microfilm Collection

Microfilm

START

MICROFILMED 1998

Penn State University Libraries University Park, PA 16802-1805

USAIN STATE AND LOCAL LITERATURE PRESERVATION PROJECT: PENNSYLVANIA

Pattee Library

Funded by the

NATIONAL ENDOWMENT FOR THE HUMANITIES

Reproductions may not be made without permission from The Pennsylvania State University Libraries

Pennsylvania Agricultural Literature on Microfilm

COPYRIGHT STATEMENT

The copyright law of the United States - Title 17, United States Code - concerns the making of photocopies or other reproductions of copyrighted material.

Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or other reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

This institution reserves the right to refuse to accept a copy order if, in its judgement, fulfillment of the order would involve violation of the copyright law.

Master Negative Storage Number

PSt SNPaAg110

CONTENTS OF REEL 110

1) Meehan's Monthly, v. 7, 1897
MNS# PSt SNPaAg110.1

2) Meehan's Monthly, v. 8, 1898
MNS# PSt SNPaAg110.2

3) Meehan's Monthly, v. 9, 1899
MNS# PSt SNPaAg110.3

4) Meehan's Monthly, v. 10, 1900
MNS# PSt SNPaAg110.4

CONTENTS OF REEL 110 (CONTINUED)

5) Meehan's Monthly, v. 11, 1901
MNS# PSt SNPaAg110.5

6) Meehan's Monthly, v. 12, 1902
MNS# PSt SNPaAg110.6

Title: Meehan's Monthly, v. 7

Place of Publication: Phila. PA

Copyright Date: 1897

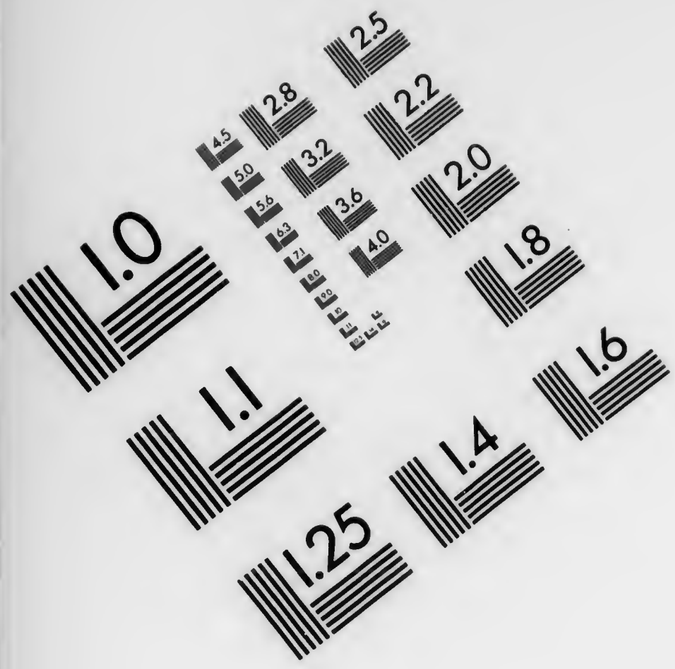
Master Negative Storage Number: MNS# PSt SNPaAg110.1

<213863> * Form:serial Input:MCB Edit:FMD
008 ENT: 820616 TYP: d DT1: 1891 DT2: 1902 FRE: m LAN: eng
037 PSt SNPaAg109.1-110.6 $bPreservation Office, The Pennsylvania State University, Pattee Library, University Park, PA 16802-1805
090 10 634.05 $bM47 $caxPX $s+U1X1891-U9X1899
090 20 Microfilm D344 reel 109.1-110.6 $cmc+(service copy, print master, archival master) $s+U1X1891-U12X1902
245 00 Meehan's monthly $ba magazine of horticulture, botany, and kindred subjects
260 Phila., PA $bT. Meehan & Sons $c1891-1902
300 12 v. $bill. $c26 cm.
310 Monthly
362 1 Published 1891-1902
500 Subtitle varies
533 Microfilm $mv.1 (1891)-v.12 (1902) $bUniversity Park, Pa. : $cPennsylvania State University $d1998 $e2 microfilm reels ; 35 mm. $f(USAIN state and local literature preservation project. Pennsylvania) $f(Pennsylvania agricultural literature on microfilm)
590 Some are reprints
590 This item is temporarily out of the library during the filming process. If you wish to be notified when it returns, please fill out a Personal Reserve slip. The slips are available in the Rare Books Room, in the Microforms Room, and at the Circulation Desk
650 0 Botany $xPeriodicals
650 0 Agriculture $xPeriodicals
650 0 Gardening $xPeriodicals
785 80 $tFloral life
830 0 USAIN state and local literature preservation project $pPennsylvania
830 0 Pennsylvania agricultural literature on microfilm
936 Vol. 1 and 2 (1891-1892) LIC

Microfilmed By:

Challenge Industries
402 E.State St
P.O. Box 599
Ithaca NY 14851-0599

phone (607)272-8990
fax (607)277-7865
www.lightlink.com/challind/micro1.htm



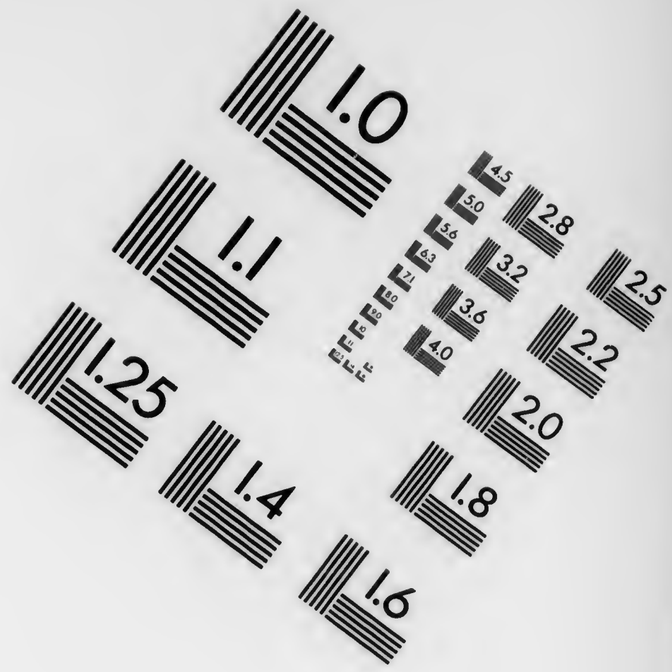
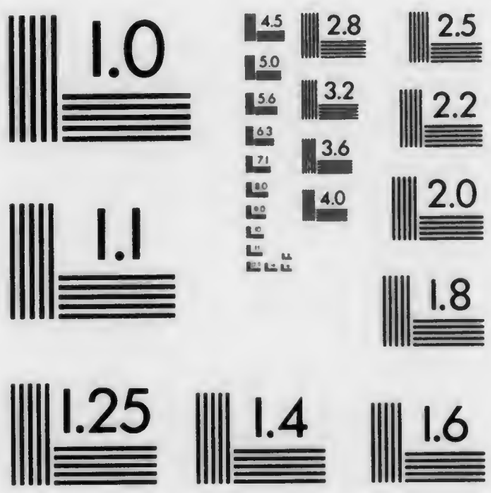
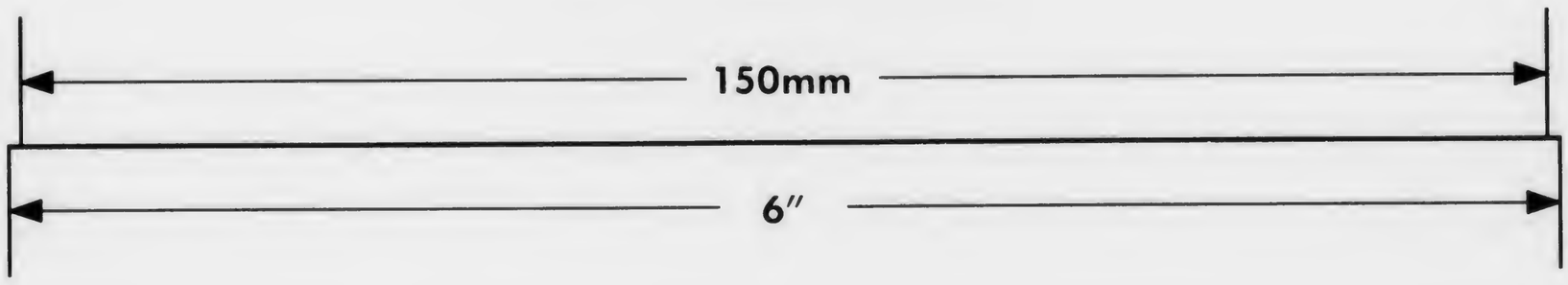
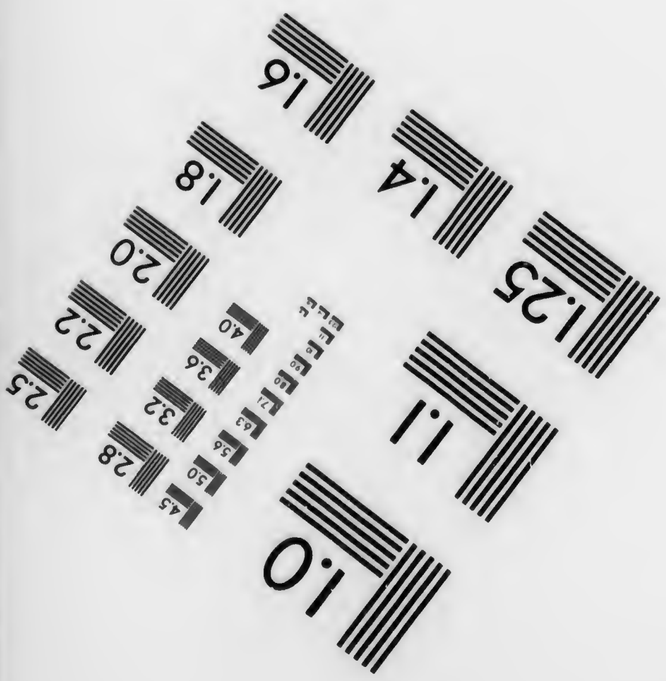


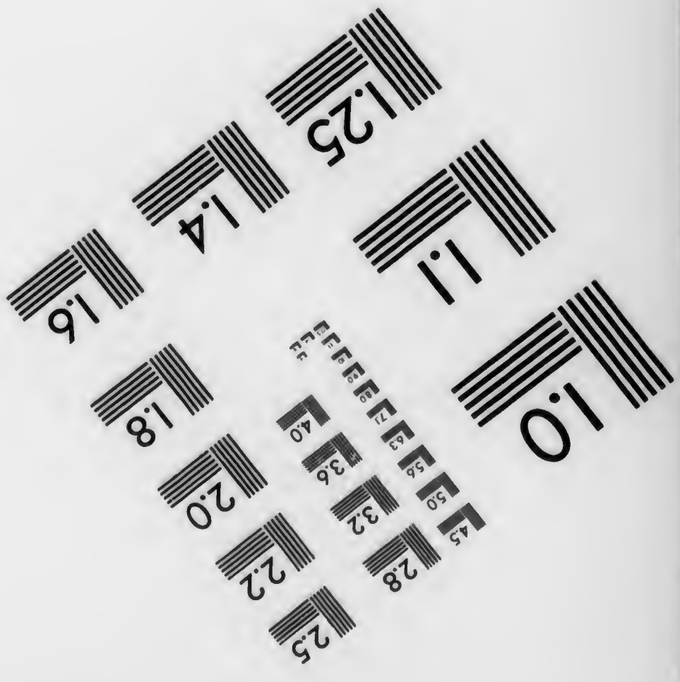
IMAGE EVALUATION
TEST TARGET QA-3







APPLIED IMAGE . Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989



FILMED WHOLE OR IN
PART FROM A COPY
BORROWED FROM:

CORNELL UNIVERSITY

Volume 7, 1897

PONTEDERIA CORDATA

LIBRARY
THE PA. STATE
COLLEGE

JANUARY, 1897

MEEHANS' MONTHLY

Devoted to
GENERAL GARDENING
&
WILD FLOWERS

Conducted by
THOMAS MEEHAN

Published by
Thomas Meehan & Sons
Germantown
Philadelphia

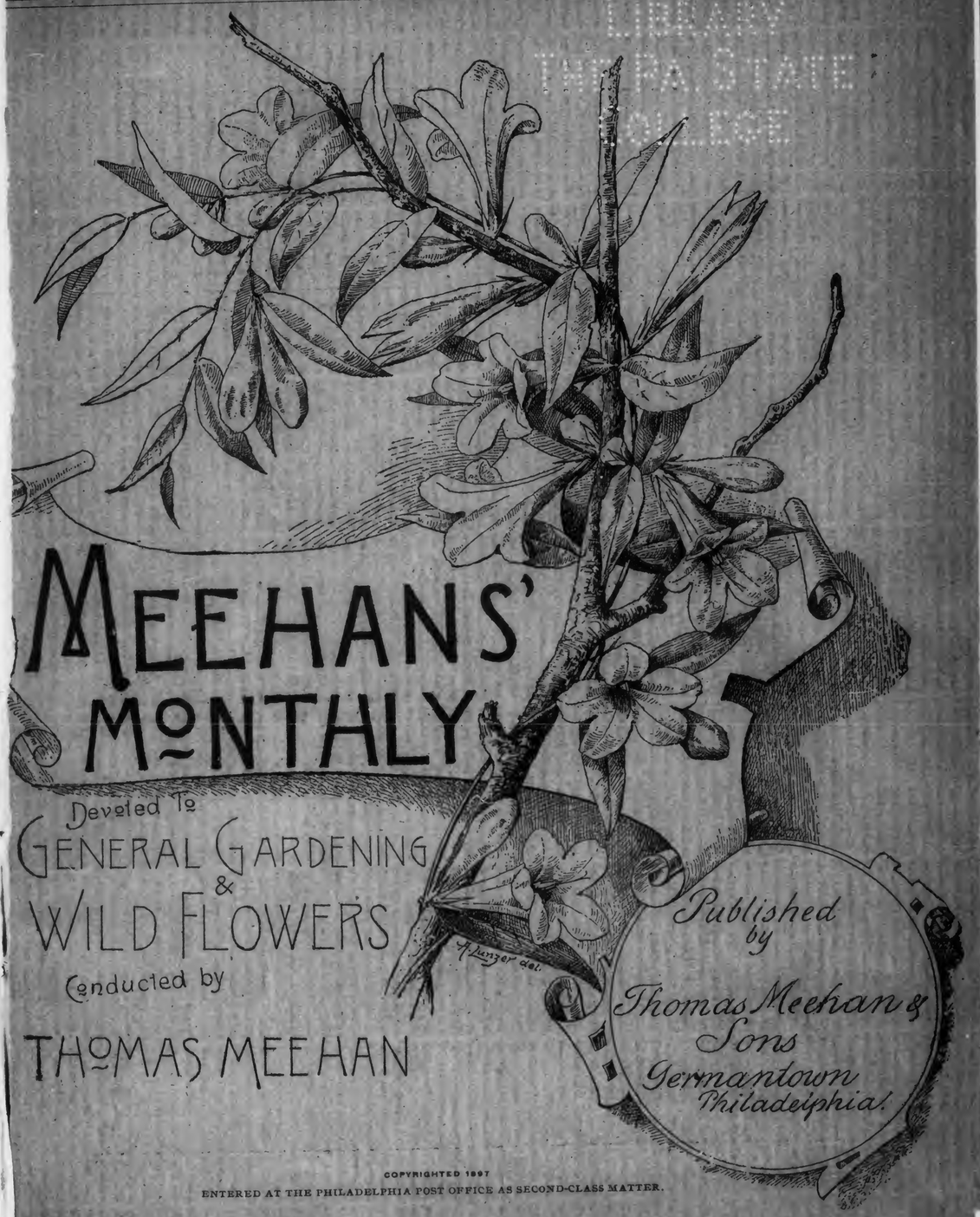
COLOR PLATE

COLOR PLATE
INTENTIONAL SECOND EXPOSURE

VOL. VII JANUARY, 1897 No. 1

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.

LIBRARY
THE PA STATE
COLLEGE



MEEHANS' MONTHLY

Devoted To
GENERAL GARDENING
&
WILD FLOWERS
Conducted by
THOMAS MEEHAN

A. Lunger del.

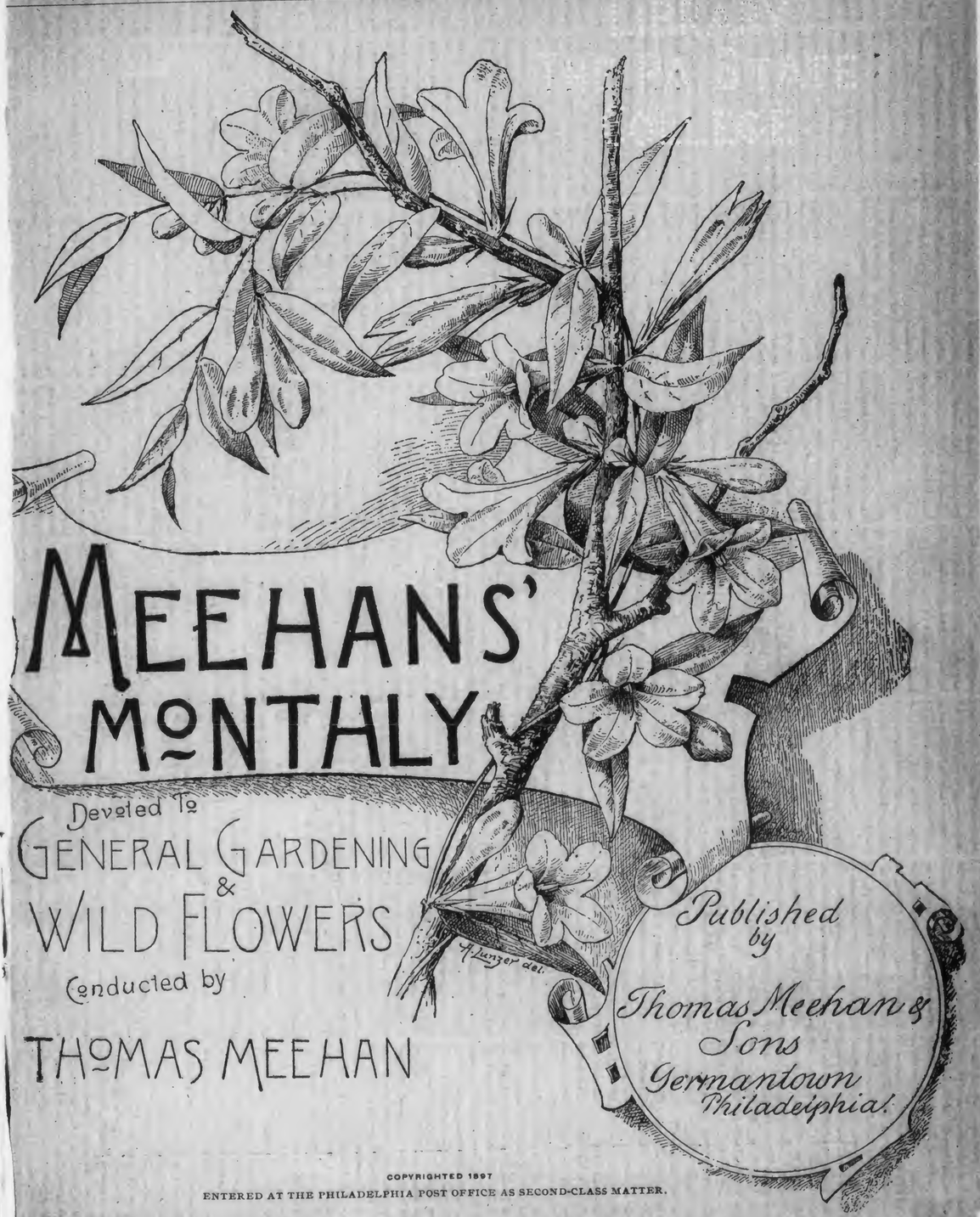
Published by
Thomas Meehan & Sons
Germantown
Philadelphia.

COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

OL. VII JANUARY, 1897 No. 1

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



MEEHANS' MONTHLY

Devoted To
GENERAL GARDENING
&
WILD FLOWERS

Conducted by
THOMAS MEEHAN

H. Lanzer del.

Published by
Thomas Meehan & Sons
Germantown
Philadelphia.

COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

INTENTIONAL SECOND EXPOSURE

Meehans' Monthly

PUBLISHED MONTHLY BY

THOMAS MEEHAN & SONS, Germantown, Phila.

Subscription Price $2.00 per year.

$1.00 for Six Months. Back Numbers 20 cts. Each.
Two Subscriptions for $3.50 per Year.

ADVERTISING RATES ON APPLICATION

Forms close on the 20th of each Month, preceding date of issue.

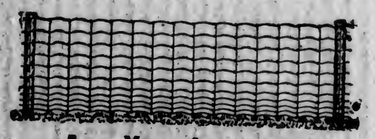
Address all Correspondence relating both to Editorial and Advertising matter, to

THOMAS MEEHAN & SONS, Publishers
Germantown, Phila., Pa.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.
WM. WARNER HARPER, MANAGER

—WANTED—
Copies of
THE AMERICAN HAND-BOOK OF ORNAMENTAL TREES
By THOMAS MEEHAN
Must be in fairly good condition. State condition, lowest price, etc.
Thomas Meehan & Sons, Publishers
Station G. Germantown, Phila., Pa.



Are You Insured?

Strange that a man will insure his buildings against fire and lightning, which come so seldom and yet take chances on destruction of crops and other losses arising from inefficient fences. **Page** fence is a **permanent investment** and the **interest** on that is the **cost** for absolute safety. Write for proofs.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

NOVELTIES IN PLANTS, FRUITS, ETC.
A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

WANTED!!!
Second-hand sets of **The Dictionary of Gardening,** by Nicholson. State condition, price, etc.
THOMAS MEEHAN & SONS, Publishers
Germantown, Phila.

TRY DREER'S GARDEN SEEDS

Plants, Bulbs and Requisites. They are the best at the lowest prices. Calendar for '96 mailed free. Address

HENRY A. DREER,
714 CHESTNUT ST., PHILA.

VARIEGATED FUNKIAS
DAY LILIES

The ordinary, large green-leaved Day Lilies, with their graceful spikes of lilac or whitish blue flowers, are well-known to all who possess grass plots large enough to admit of a few ornamental plants; but the variegated sorts are not so frequently seen, and they remain practically unknown to the average home gardener. There is a deep contrast between the dark green and white of the striped leaves, forming an equal contrast with the green grass of a lawn. It also makes a good border or edging for walks or beds, the leaves lying closer than the large green form. We offer fine pot grown plants at 15c. each; $1.25 per 10 or $10.00 per 100.

Our grounds are always open to visitors, and we invite inspection of our stock especially during the summer, when the plants are in leaf and bloom, feeling sure that the visitor would be well pleased with the stock. Address or call on

THOMAS MEEHAN & SONS
NURSERYMEN and LANDSCAPE ENGINEERS
Upper Church and Chew Sts.
Telephone 9411 A. Germantown, Phila., Pa.

OUR TREES

Etc. advertise themselves. The best always cheapest. Elegant catalogue, magazine size, 168 pages free. Gives the cream of the new and the best of the old in vegetable and flower seeds, fruit and ornamental trees, grapes, shrubs, roses, hardy perennials, bulbs and greenhouse plants. Immense quantities. No finer assortment of fruits in America, with more acres of ornamentals than any other nursery can show. Nurserymen, florists, dealers and planters are cordially invited to call and inspect our stock. Seeds, plants, bulbs, small size trees, etc. by mail postpaid, larger by freight or express. Safe arrival and satisfaction guaranteed. Send today for catalogue, free, it will save you money.
43d Year. 32 Greenhouses. 1000 Acres.
THE STORRS & HARRISON CO.,
Box 68. PAINESVILLE, O.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

PONTEDERIA CORDATA.

PICKEREL WEED.

NATURAL ORDER, PONTEDERIACEÆ.

PONTEDERIA CORDATA, LINNÆUS.—Leaves cordate-oblong, obtuse; petiole shorter than the peduncle; spike cylindrical, pubescent. Stem thick, round, erect, arising from one to two feet above the water, bearing a single leaf. Leaves from four to seven inches long, by one and a half to three inches wide, very smooth and glossy, almost saggitate, with veins beautifully arranged to conform to the margin. Flowers in a spike, arising above the spathe, very irregular. Perianth two-lipped, each lip three-cleft, always blue, appearing in July. (Wood's *Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Botany of the Southern United States*.)

Julius Pontedera, in whose honor this beautiful genus was named by Linnæus, was born at Vicenza, in Italy, in 1688. In 1718, he published a compendium of botanical plates, which his compeers speak of as a very useful work. In 1719 he was made director of the Botanic Garden at Padua, one of the first botanic gardens, and Professor of Botany. In 1720 appeared his *Anthology, or the Nature of the Flower*. He died in 1757. The genus was named by Linnæus in 1737,—not that he had aught to do with the history of the plant, but simply as a compliment to a great botanist. At the period when Pontedera lived, botany was in a transitive state. He was one of the earliest to see the necessity of a more natural classification of plants than prevailed at that day. Our early botanist, Dr. W. P. C. Barton, says he was among the earliest to perceive the natural divisions into which Compositæ was subsequently arranged,—and Milne says, he saw particularly the value of the involucre, and the whole conformation of the receptacle in these flowers. As usual in the case of so many reformers, some of his contemporaries did not take kindly to his innovations. Haller appears to have complained of him to Linnæus, for we find the latter, in a letter to Haller, gently remonstrating. The great botanist says, "In my opinion, Pontedera is almost the only philosophical botanist of his time, and though he has made confusion in some things, he has been very useful." It was, however, known to botanists before Linnæus gave it the present name. Gronovius had it from Clayton, in Virginia, as a sort of Water-Plantain (*Alisma*), an Arrow-leaf (*Saggitaria*) or even a *Gladiolus*. Houston, who described for the first time a number of American plants, named it *Michelia*, and this would have been probably adopted by Linnæus only for there being a prior genus so named.

Leaving the history of the genus for that of the species, Houston found his plant at Vera Cruz. Its Linnæan name, *cordata*, is from its pretty, heart-shaped leaf,—but the leaves are not all heart-shaped. Sometimes they are so narrow that botanists have believed these variations constituted distinct species. Thus we have *P. lancifolia* by Muhlenberg, *P. lanceolata* by Nuttall, *P. angustifolia* by Pursh, and other botanists have made species of the forms. In these later times, when botanists have the opportunity of seeing numerous specimens from many localities, it is not uncommon to see all the forms of foliage on the same plant. Indeed, water plants, generally, have foliage of such unstable forms that botanists rarely make species on variations in the leaves alone.

As a matter of botanical study the genus is a very interesting one. It is closely related to the Melanthaceous section of the great lily family, and therefore has the floral parts arranged in cycles of three. There should be three sepals and three petals forming a six-parted perianth, and three outer and three inner—six stamens. But, by a peculiar union of the parts, the corolla has become two-lipped or bi-labiate. In the one case three are united so as to look like an upper lip,—the lower three segments are spreading. Our Fig. 1 shows this character. In the lilies, the petals fall after fertilization of the flower—but a singular character of the *Pontederiaceæ* is that, instead of falling, the petals roll in, and form a sort of crown on the ovarium (see Fig 2.) The stamens also partake of the general inequality, for while three start from near the base of the tube of the perianth, the other

Meehans' Monthly

Thomas Meehan & Sons, Germantown, Phila.

Subscription Price $2.00 per year.

$1.00 for 3rd Months. Back Numbers 20 cts. Each.
Two Subscriptions for $3.50 per Year.

ADVERTISING RATES ON APPLICATION

Forms close on the 20th of each Month, preceding date of issue.

Address all Correspondence relating both to Editorial and Advertising matter, to

THOMAS MEEHAN & SONS, Publishers
Germantown, Phila., Pa.

IT WILL PAY YOU to send for our New Catalogue, which tells of Hardy Trees, Shrubs, Plants, Roses, Fruit, and our special stock of Rhododendrons. It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.

—WANTED—
Copies of
THE AMERICAN HAND-BOOK OF ORNAMENTAL TREES
By THOMAS MEEHAN
What will be taken from publisher. Also to exhibition, lowest price, etc.
Thomas Meehan & Sons, Publishers
Station D. Germantown, Phila., Pa.

Are You Insured?

Because that a small wire fence, like Page Fence, will protect your property against trespassing animals, which often do serious damage to crops and gardens, is not sufficient reason for not insuring it. Insurance against fire, lightning, tornadoes, etc., is not necessary with Page Fence. Insurance against the ravages of animals is. Page Fence is guaranteed. Investigate and the reasons will be given. Send for booklet which explains.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

NOVELTIES IN PLANTS, FRUITS, ETC.
Descriptions and Prices in our Catalogue, Forwarded Free.

WANTED!!!
Second-hand sets of The Dictionary of Gardening, by Nicholson. State condition, price, etc.
THOMAS MEEHAN & SONS, Publishers
Germantown, Phila.

TRY DREER'S GARDEN SEEDS

Plants, Bulbs and Roses also. They are the best at the lowest prices. Calendar for 1892 mailed free. Address

HENRY A. DREER,
714 CHESTNUT ST., PHILA.

VARIEGATED FUNKIAS
DAY LILIES

The ordinary, large green-leaved Day Lillies, with their graceful spikes of lilac or whitish blue flowers, are well known to all who possess grass plots large enough to admit of a few ornamental plants; but the variegated sorts are not so frequently seen, and they remain practically unknown to the average home gardener. There is a deep contrast between the dark green and white of the striped leaves, forming an equal contrast with the green grass of a lawn. It also makes a good border or edging for walks or beds, the leaves lying closer than the large green form. We offer fine pot grown plants at 15c. each; $1.25 per 10 or $10.00 per 100.

Our grounds are always open to visitors, and we invite inspection of our stock especially during the summer, when the plants are in leaf and bloom, feeling sure that the visitor would be well pleased with the stock. Address or call on

THOMAS MEEHAN & SONS
NURSERYMEN and LANDSCAPE GARDENERS
Upper Church and Chew Sts.
Telephone 9411 A. Germantown, Phila., Pa.

OUR TREES

for advertising themselves. The best always do. Elegant catalogue, magazine size, 168 pages free. Gives the season of the year and the look of the old to vegetables and flowers again. Hardy and perennial trees, shrubs, vines, roses, bulbs, hardy perennials, bedding and greenhouse plants, evergreens, specialties. No finer assortment of Conifers in America, with more sizes of ornamentals than any other nursery can show. Nurserymen, florists, dealers and planters are cordially invited to call and inspect our stock. Seeds, plants, bulbs, small fruit trees, etc., by mail, prepaid, except by special express. Safe arrival and satisfaction guaranteed. Send today for catalogue, free. It will save you money.

450 Year. 25 Greenhouses. 1000 Acres.
THE STORRS & HARRISON CO.,
Box 62. PAINESVILLE, O.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

PONTEDERIA CORDATA.

PICKEREL WEED.

NATURAL ORDER, PONTEDERIACEÆ.

PONTEDERIA CORDATA, LINNÆUS.—Leaves cordate-oblong, obtuse; petiole shorter than the peduncle; spike cylindrical, pubescent. Stem thick, round, erect, arising from one to two feet above the water, bearing a single leaf. Leaves from four to seven inches long, by one and a half to three inches wide, very smooth and glossy, almost saggitate, with veins beautifully arranged to conform to the margin. Flowers in a spike, arising above the spathe, very irregular. Perianth two-lipped, each lip three-cleft, always blue, appearing in July. (Wood's *Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Botany of the Southern United States*.)

Julius Pontedera, in whose honor this beautiful genus was named by Linnæus, was born at Vicenza, in Italy, in 1688. In 1718, he published a compendium of botanical plates, which his compeers speak of as a very useful work. In 1719 he was made director of the Botanic Garden at Padua, one of the first botanic gardens, and Professor of Botany. In 1720 appeared his *Anthology, or the Nature of the Flower*. He died in 1757. The genus was named by Linnæus in 1737,—not that he had aught to do with the history of the plant, but simply as a compliment to a great botanist. At the period when Pontedera lived, botany was in a transitive state. He was one of the earliest to see the necessity of a more natural classification of plants than prevailed at that day. Our early botanist, Dr. W. P. C. Barton, says he was among the earliest to perceive the natural divisions into which Compositæ was subsequently arranged,—and Milne says, he saw particularly the value of the involucre, and the whole conformation of the receptacle in these flowers. As usual in the case of so many reformers, some of his contemporaries did not take kindly to his innovations. Haller appears to have complained of him to Linnæus, for we find the latter, in a letter to Haller, gently remonstrating. The great botanist says, "In my opinion, Pontedera is almost the only philosophical botanist of his time, and though he has made confusion in some things, he has been very useful." It was, however, known to botanists before Linnæus gave it the present name. Gronovius had it from Clayton, in Virginia, as a sort of Water-Plantain (*Alisma*), an Arrow-leaf (*Saggitaria*) or even a *Gladiolus*. Houston, who described for the first time a number of American plants, named it *Michelia*, and this would have been probably adopted by Linnæus only for there being a prior genus so named.

Leaving the history of the genus for that of the species, Houston found his plant at Vera Cruz. Its Linnæan name, *cordata*, is from its pretty, heart-shaped leaf,—but the leaves are not all heart-shaped. Sometimes they are so narrow that botanists have believed these variations constituted distinct species. Thus we have *P. lancifolia* by Muhlenberg, *P. lanceolata* by Nuttall, *P. angustifolia* by Pursh, and other botanists have made species of the forms. In these later times, when botanists have the opportunity of seeing numerous specimens from many localities, it is not uncommon to see all the forms of foliage on the same plant. Indeed, water plants, generally, have foliage of such unstable forms that botanists rarely make species on variations in the leaves alone.

As a matter of botanical study the genus is a very interesting one. It is closely related to the Melanthaceous section of the great lily family, and therefore has the floral parts arranged in cycles of three. There should be three sepals and three petals forming a six-parted perianth, and three outer and three inner—six stamens. But, by a peculiar union of the parts, the corolla has become two-lipped or bi-labiate. In the one case three are united so as to look like an upper lip,—the lower three segments are spreading. Our Fig. 1 shows this character. In the lilies, the petals fall after fertilization of the flower—but a singular character of the *Pontederiaceæ* is that, instead of falling, the petals roll in, and form a sort of crown on the ovarium (see Fig 2.) The stamens also partake of the general inequality, for while three start from near the base of the tube of the perianth, the other

INTENTIONAL SECOND EXPOSURE

three are at the summit of the tube. The irregularity follows to the ovarium, which in early life is three-celled, as all well-behaved Liliaceous plants should be,—but, as it grows, two cells become abortive, and in the end we have but a one-celled capsule. Rafinesque endeavored to establish it as a distinct genus on account of this peculiarity, and it appears as *Unisema obtusifolia* in some of his works.

Some of the earlier botanists believed the plant to be identical with one described by Lourier, as growing in Cochin China. Subsequent authors considered the latter distinct and named it *Pontederia Lourierii*. Kunth took the Asiatic one completely out of the genus, and it appears in his works as *Monochoria*. The modern knowledge of variations makes it not improbable that the species of both these widely-separated regions may after all be identical.

The geographical range of the species is very remarkable. It is not found anywhere on the Pacific Coast, but on the Atlantic it grows along the shores of Brazil, and thence northwardly to Canada, apparently enjoying equally the warmer waters of the tropics with the colder streams of sub-arctic regions. The roots, however, die when exposed to frost,—at least this is the experience of Mr. W. B. Hemsley, at the Royal Gardens, Kew, as given in the *Garden* for 1880.

The covering of water, in the place where they grow, seems to protect them in our country from extreme cold. It is remarkable how nature seems to fit every circumstance to the successful growth of some plant or another. As Dryden translates Virgil :

> "Not every plant on every soil will grow,
> The sallow loves the watery ground and low,
> The marshes alders,—nature seems to ordain
> The rocky cliff for the wild ashes reign"

and, we might say, tide-water mud flats, especially, for such plants as our Pickerel Weed. At one time, it was supposed to be confined to such localities. So recent a writer as Nuttall says, "within the limits of tide-water throughout the Atlantic Coast." Pursh, however, in his journal of a tour through the Northern States had noted his surprise at finding it growing at Martin's Creek, across the Tunkhannock. Torrey found it growing in mountain lakes in New York State,—Mr. Brodhead, in the *Entomologist and Botanist*, notes it so far west as in Missouri,—but in lakes in Jasper County only in that State ; while Mr. C. H. Baker reports that he has seen it on lakes and rivers in the interior of Minnesota, in latitude about as high as the source of the Mississippi. Professor Thos. C. Porter describes it as most beautiful at Swartswood Lake, in New Jersey, where it was growing in company with *Nelumbium luteum*, *Nuphar advena*, *Brasenia peltata*, and other common aquatics of that region. Kalm notices it in his volume of *Travels in America*, but these were probably Philadelphia specimens, for it abounds on the tide-water mud flats of the Schuylkill River, from whence our illustration was taken.

Barton gives August for the vicinity of Philadelphia, and Darlington July for nearly the same locality. Elliott, in his botany of Carolina, says it is there in bloom from April to September.

The description says it is always blue, but Chamisso and Schlechtendal observe that they had seen a plant with white flowers.

Elliott says it was known in his day as "*Wampee*," no doubt an Indian name,—and Baker says that the Objibway Indians call it *Mosotawug*, meaning "Moose ears," from the shape, and possibly the leathery texture, of the leaves. No explanation of the common name, Pickerel Weed, seems to be given anywhere. On this, Mr. Isaac C. Martindale speculates as follows, "I have always thought the name came from association of the plant with the fish of that name. The narrow-leaved form is quite abundant in the streams in the New Jersey Pine Barrens, where also fine pickerel abound. I have repeatedly seen the fish resting under the leaves, as a most secure position for a motionless fish. Here they could quite easily elude even the weary eye of a disciple of Isaak Walton, who could hardly distinguish the narrow leaves, and even the reclining stems under water from the fish. I remember just such an occasion at the Quaker Bridge stream several years ago. I should say Pickerel Weed comes from the plant being a favorite resort for this fish." This may be but an ingenious guess.

EXPLANATION OF THE PLATE.—1 The bi-labiate, six-parted flower. 2 Three-sided ovarium with remains of faded flower. 3 Spike of flower with spathaceous bract at base. 4 Spike with immature fruit.

WILD FLOWERS AND NATURE.

THE PURE LOVE OF NATURE.

> Impose your moods on Nature, and the moods
> Alone return to you. Her joyful ways,
> Where great and solitary beauty broods,
> And makes the world, are hidden from your gaze.
>
> But love her for herself—unfold your breast
> To hear her music and receive her fire.
> You shall have joy and beauty, and the rest
> Of self-forgetfulness and dead desire.
>
> —STOPFORD A. BROOKE.

PICKEREL WEED ; ADDITIONAL NOTE.—It was the desire of MEEHANS' MONTHLY to make the plate and chapters of the magazine so like those in the original "Flowers and Ferns of the United States" that those who had this beautiful work could, if they preferred, bind them in as separate from the present publication. The aim has been, therefore, to tell all that was worthy of telling in the two pages assigned. But the author has been so enthused with his Pickerel Weed story that a portion of it had to be cut out to suit the paging. It is too full of popular information to admit of being killed, as the printers say, so is given as an appendix here :—

The singular beauty of the cærulean flowers always attracts admiration. Mrs. R. H. Lunay, writing of the wild flowers of Nantucket, says, "The lovely *Rhexia Virginica*, rightly called Meadow Beauty, peers at you from its meadow home ; and the *Pontederia* points its cærulean spires toward a heaven not more 'deeply, darkly, beautifully blue' than its own brilliant flowers." The plant is seldom commented on without exacting a tribute to its charms. Mr. C. H. Baker, referring to a scene in New Jersey, remarks, "they were perhaps the handsomest plants I have found. They are upright in habit, luxuriant in growth, rich and glossy in color, while the stems are slender, and the leaves seem to be quite slender and unusually sharp, approaching somewhat the form of *Sagittaria*. Many of the clumps are quite elegant." Plukenet, writing of it in 1691, likens the spike of flowers to the beauty of a hyacinth. Mr. S. A. Forbes, describing the botany of Southern Illinois, says, "Of the shallow lakes of the Mississippi bottoms in southwest Illinois, I have seen acres of their expanse gorgeous with the purple, and the green, and the gold of the Pickerel Weed." Miss Mary C. Reynolds, describing, in the *Botanical Gazette* for 1879, a botanical exploration in Florida, remarks, "Our horse forced the cart through half an acre of *Pontederia cordata*. The plants averaged four feet high, and were in full bloom." This was in the vicinity of St. Augustine, and was in September and October. That the party was able to drive a cart through them indicates that in this instance the plants were growing on firmer ground than the slimy ooze they generally prefer. The times of blooming are variously stated. Dr. Baldwin, in a letter to Dr. Darlington, notes that it was in bloom at St. Mary's, Florida, on the 23d of May.

PLANT PERSISTENCY.—It is remarkable that some perennial plants seem little inclined to extend themselves by seeds, but will hold on to some locality with surprising persistency if not uprooted by some traveling herbarium. On this point, the following from the *Hartford Times* has a special interest :—

"With astounding tenacity, some of our native wild plants cling to their natural chosen locality. Only this season, I found several blossoms of the white Arrow-head (*Sagittaria variabilis*) growing in the cracks between curb and gutter-stone, on Westland Street. The seed must have drifted from the wet bank above and lodged in the mud, where it sprouted and grew. Farther up on the same street plenty of the closed blue gentian were in flower. On our own woodland place, an exquisite little fern, the *Botrychium ternatum*, or Grape Fern (see Meehan's Flowers and Ferns of the United States, Volume II.), has grown unobserved on the protecting ridge under the wire fence, till a few weeks ago I found it. It too has clung to its once favored spot." Especially persistent for an aquatic.

VIOLETS AT CHRISTMAS TIME.—In those parts of the United States which are subject to low temperature in winter time, lovers of gardening may not have the enjoyment of summer flowers in the open air ; but for all that they have many opportunities for pleasure. It is well, however, for every one in every locality to believe that no other part of the world is so fortunate as their own ; and when we read in the newspaper of portions of southern California in which these sweet little flowers, the violets, of which Shakespeare says "they load the air of March with fragrance," happen to perform the same beneficial office in December, we feel happy in the enjoyment of those who are among them ; and yet we think these people must have missed the skating and sleigh-riding, and many other pleasures which they enjoyed in their former eastern homes.

THE WILD FLOWERS OF NEW JERSEY.—Sometime, I think, we shall find a poet describing this wonderful region in a setting of verse or romance, and it will become as famous as any part of our land. At every season of the year, there is a fascination in it for the lover of nature, but perhaps at no time is its glory quite so marked as in the fall. Then, not only to the botanical student, but to the lover of beauty for its own sake, does it hold out rare attractions. Yesterday, as the train bore us along, it was an exhilarating picture that was visible from the car window. The Swamp Maples were just reddening and casting a blush upon the dark (almost black) waters of the Rancocas. Up the tree trunks, here and there, the five-leaved American Ivy climbed, looking with its scarlet leaves like tongues of flame. On the ground, the duller crimson of the Sumac (*Rhus copallina*) glowed sullenly, like half-smothered embers. The marshy places were a sheet of brilliant yellow from the abundance of the Swamp Burr-marigold (*Bidens chrysanthemoides*, I suppose), growing thick as buttercups in a June meadow. It really seemed as though nature were taking a hand at politics and declaring for gold ! We left the train at Brown's Mills Junction, and walked a quarter of a mile or so under the pines in quest of *Lygodium palmatum*, the climbing fern, which we found growing by a shady little stream, and clambering up the catbriars, or lolling on the banks of Sphagnum, as though there was something in the warm autumn day to make ferns lazy as well as the chickens up the road—to say nothing of larger and unfeathered bipeds. On the edge of the old road that wound through the trees, *Polygonella articulata* grew abundantly, its beautiful sprays of bloom nodding in the quiet breeze—some pure white, some suffused with a tinge of pink. *Aster spectabilis*, with flowers an inch or two across, was blooming in great masses of violet among the Sweet-Fern and grasses ; while ever and anon we came upon *Diplopappus linariifolius*,—to me one of the most attractive flowers that grow. There is a wonderful grace about the drooping rays, and the whole habit of the plant indeed. Everywhere were those characteristic grasses of the barrens, the various species of Old Man's Beard, (*Andropogon*) looking like traps for thistle down, till an examination convinces one that they manufacture their own. Gerardias, Golden Asters and Goldenrods of many species, were additional elements in the vast boquet, any description of which must be to you as a twice-told tale. C. F. SAUNDERS.

Philadelphia, October 5th.

THE HOG-PEANUT IN MIDWINTER BOTANY.—Mr. E. Newlin Williams writes :

"The hog-peanut we always see in a woods walk, climbing promiscuously about over the undergrowth, choking out many of the less sturdy, lower herbs, and often reaching the eight-foot plume of a blooming snakeroot. I have the seeds at hand, oblong and purplish black, mottled with gray or brown. Midwinter finds the little pods split and the separate lobes each curled, reminding one of the twisted horns of an antelope, though they hang with the points diverging downward." *Apios tuberosa* is often called American groundnut,—but the pretty paragraph above probably refers to the *Amphicarpæa*.

THE MALE AND FEMALE OSAGE ORANGE.—It is not generally known that the osage orange has male and female flowers on different plants,—or that plants of the different sexes can be determined at a comparatively early age, long before the flowering time begins. The male plants have large, thick, shining leaves, much more like those of a real orange than the female.

CYPRIPEDIUM PUBESCENS.—Mr. C. E. Pleas, of Clinton, Ark., sends a photograph showing the beautiful Downy Lady Slipper, *Cypripedium pubescens*, grown in the vicinity of Clinton, Ark. They are so remarkably beautiful that we have been tempted to engrave it for the pleasure of our readers. In that section of the country, he says, they grow in the deep shady ravines of their mountains. He has never seen them elsewhere to rival in luxuriance those he finds growing there. Some of the flowers are frequently as large as a good sized hen egg.

CYPRIPEDIUM PUBESCENS.

BOTRYCHIUM TERNATUM. — The following note, from a Hartford, Conn., correspondent, refers to one of the grape-ferns,—a variety of *Botrychium ternatum*, which appears under a variety of forms in various parts of the United States :

"I send to-day, a to me unknown little beauty. Is it a fern? Found it between a group of Aspidiums, *Pteris aquilina* and Osmundas near by when I picked some seeds of *Rhexia Virginica* also intergrown with it. Broke inadvertently the flower spike by digging deep down for the root. The spores or flowers emit a fine dust or pollen. Have one flower left, and another plant growing in the grass near the fence. All land belonged not so many years ago to our 'ten mile woods' a large part of which is now converted into the new Keney Park (and which will nearly surround our place on three sides.) So it comes at last as I long ago wished." MRS. W. S.

EARLY BUTTERCUPS. — Buttercups and daisies are among the first harbingers of spring. In every part of the temperate regions of the earth, are some kind of buttercup. They are among the earliest flowers to bloom, and, while the buttercup of California is especially prominent in this homage to spring, it is the custom to endeavor to find some open by Christmas Day ; but so far no one has been able to gain this honor. Mrs. Cunningham, of Livermore, has gathered them as early as the 18th of January. So far, that is the earliest date recorded.

VIOLETS AT CHRISTMAS TIME.—In those parts of the United States which are subject to low temperature in winter time, lovers of gardening may not have the enjoyment of summer flowers in the open air ; but for all that they have many opportunities for pleasure. It is well, however, for every one in every locality to believe that no other part of the world is so fortunate as their own ; and when we read in the newspaper of portions of southern California in which these sweet little flowers, the violets, of which Shakespeare says "they load the air of March with fragrance," happen to perform the same beneficial office in December, we feel happy in the enjoyment of those who are among them ; and yet we think these people must have missed the skating and sleigh-riding, and many other pleasures which they enjoyed in their former eastern homes.

THE WILD FLOWERS OF NEW JERSEY.—Sometime, I think, we shall find a poet describing this wonderful region in a setting of verse or romance, and it will become as famous as any part of our land. At every season of the year, there is a fascination in it for the lover of nature, but perhaps at no time is its glory quite so marked as in the fall. Then, not only to the botanical student, but to the lover of beauty for its own sake, does it hold out rare attractions. Yesterday, as the train bore us along, it was an exhilarating picture that was visible from the car window. The Swamp Maples were just reddening and casting a blush upon the dark (almost black) waters of the Rancocas. Up the tree trunks, here and there, the five-leaved American Ivy climbed, looking with its scarlet leaves like tongues of flame. On the ground, the duller crimson of the Sumac (*Rhus copallina*) glowed sullenly, like half-smothered embers. The marshy places were a sheet of brilliant yellow from the abundance of the Swamp Burr-marigold (*Bidens chrysanthemoides*, I suppose), growing thick as buttercups in a June meadow. It really seemed as though nature were taking a hand at politics and declaring for gold ! We left the train at Brown's Mills Junction, and walked a quarter of a mile or so under the pines in quest of *Lygodium palmatum*, the climbing fern, which we found growing by a shady little stream, and clambering up the catbriars, or lolling on the banks of Sphagnum, as though there was something in the warm autumn day to make ferns lazy as well as the chickens up the road—to say nothing of larger and unfeathered bipeds. On the edge of the old road that wound through the trees, *Polygonella articulata* grew abundantly, its beautiful sprays of bloom nodding in the quiet breeze—some pure white, some suffused with a tinge of pink. *Aster spectabilis*, with flowers an inch or two across, was blooming in great masses of violet among the Sweet-Fern and grasses ; while ever and anon we came upon *Diplopappus linariifolius*,—to me one of the most attractive flowers that grow. There is a wonderful grace about the drooping rays, and the whole habit of the plant indeed. Everywhere were those characteristic grasses of the barrens, the various species of Old Man's Beard, (*Andropogon*) looking like traps for thistle down, till an examination convinces one that they manufacture their own. Gerardias, Golden Asters and Goldenrods of many species, were additional elements in the vast boquet, any description of which must be to you as a twice-told tale. C. F. SAUNDERS.

Philadelphia, October 5th.

THE HOG-PEANUT IN MIDWINTER BOTANY.—Mr. E. Newlin Williams writes :

"The hog-peanut we always see in a woods walk, climbing promiscuously about over the undergrowth, choking out many of the less sturdy, lower herbs, and often reaching the eight-foot plume of a blooming snake-root. I have the seeds at hand, oblong and purplish black, mottled with gray or brown. Midwinter finds the little pods split and the separate lobes each curled, reminding one of the twisted horns of an antelope, though they hang with the points diverging downward." *Apios tuberosa* is often called American ground-nut,—but the pretty paragraph above probably refers to the *Amphicarpæa*.

THE MALE AND FEMALE OSAGE ORANGE.—It is not generally known that the osage orange has male and female flowers on different plants,—or that plants of the different sexes can be determined at a comparatively early age, long before the flowering time begins. The male plants have large, thick, shining leaves, much more like those of a real orange than the female.

CYPRIPEDIUM PUBESCENS.—Mr. C. E. Pleas, of Clinton, Ark., sends a photograph showing the beautiful Downy Lady Slipper, *Cypripedium pubescens*, grown in the vicinity of Clinton, Ark. They are so remarkably beautiful that we have been tempted to engrave it for the pleasure of our readers. In that section of the country, he says, they grow in the deep shady ravines of their mountains. He has never seen them elsewhere to rival in luxuriance those he finds growing there. Some of the flowers are frequently as large as a good sized hen egg.

CYPRIPEDIUM PUBESCENS.

BOTRYCHIUM TERNATUM. — The following note, from a Hartford, Conn., correspondent, refers to one of the grape-ferns,—a variety of *Botrychium ternatum*, which appears under a variety of forms in various parts of the United States :

"I send to-day, a to me unknown little beauty. Is it a fern? Found it between a group of Aspidiums, *Pteris aquilina* and Osmundas near by when I picked some seeds of *Rhexia Virginica* also intergrown with it. Broke inadvertently the flower spike by digging deep down for the root. The spores or flowers emit a fine dust or pollen. Have one flower left, and another plant growing in the grass near the fence. All land belonged not so many years ago to our 'ten mile woods' a large part of which is now converted into the new Keney Park (and which will nearly surround our place on three sides.) So it comes at last as I long ago wished." MRS. W. S.

EARLY BUTTERCUPS. — Buttercups and daisies are among the first harbingers of spring. In every part of the temperate regions of the earth, are some kind of buttercup. They are among the earliest flowers to bloom, and, while the buttercup of California is especially prominent in this homage to spring, it is the custom to endeavor to find some open by Christmas Day ; but so far no one has been able to gain this honor. Mrs. Cunningham, of Livermore, has gathered them as early as the 18th of January. So far, that is the earliest date recorded.

INTENTIONAL SECOND EXPOSURE

LOWER ORDERS OF VEGETATION.—In olden times, the idea of a superintending Providence was in connection with some manifestations of a high and mighty power. Jupiter would never have been regarded as the father of the Gods had he not been able to harness the lightening and throw thunderbolts. Moderns have learned to look downwards instead of upwards in their worship of the Supreme power. The field of microscopy is in Wonderland. The lower orders of vegetation, almost invisible as its members are to the unaided eye, are replete with astounding facts. Who would believe it possible that already there are over 40,000 species that have been described and named that only a powerful microscope can identify. Of flowering plants there are about 100,000,—and yet the minute organisms in question count up half as many, with probably as many more to come! And they have their likes and dislikes, just as higher organisms have. Some will only grow and flourish under special and, one might say, exceptional conditions. Among these, fortunately are those which play such havoc with human health and human life. There are others which, like our common weeds, are satisfied with whatever comes first, and we can see these effects everywhere. Speaking of the fruit rot, the following extract from a lecture before the Massachusetts Horticultural Society, by Prof. George L. Atkinson, of Cornell, has an especial interest in this connection:—

"One of the very striking tendencies which we see in the case of some of the parasitic fungi is that of a wide range in parasitism, so that the fungus is not confined to certain genera as hosts, nor even to the families in which these genera are located, but the range of their operations and injuries extends beyond these limits. In a sense they are omnivorous, and such species sometimes receive their specific name in recognition of the great versatility of their tastes and depredations, and their easy adaptation to a great variety of things in their gourmand-like search for dainty bits of pabulum.

The common fruit rot is a good example of the fungus appetite which rarely goes begging for some satisfying morsel. It appears to be king of rots in the case of certain of our stone fruits, like the peach, plum, and cherry. But it also attacks the pomaceous fruits, berries, etc., and finds the twigs of the peach, cherry, and other fruits palatable. As with many other parasitic fungi, its growth and the injuries which it causes are alike hastened by the prevalence of wet or moist weather. It is also much more likely to attack overripe fruit, and the fruit grower who takes the precaution to pick his fruit for shipment while it is still firm, or he who selects the hard-fleshed varieties, often checkmates this enemy. The fact that it is more likely to attack the overripe fruit or the soft-fleshed varieties, indicates that it is not strictly an obligate parasite, and that, even when it is doing much of its injury, it perhaps could not be said to be existing as a parasite, since the fruit is then in a very suitable condition to act as an excellent culture medium. It does, however, act as a serious parasite at times, and since it can adapt itself so readily to a saprophytic or parasitic existence, the question might be raised whether or not it is just now in the transitional stage, passing from a saprophytic life to a parasitic one. If this were the case we should expect that as time went on it would become more and more dependent on the host in a living condition, and that ultimately it would pass from the domain of saprophytism to the domain of parasitism."

VARIATIONS IN ACORNS.—It is said that in individual trees scarcely two leaves can be found exactly alike. What is true of leaves is true of seeds,—and indeed of every part of a tree. It is also true of the behavior of trees during their life career. In acorns especially, one may note a remarkable difference in their behavior. Some species of acorn will preserve their vital power without much difficulty for a couple of years, while others can rarely be found with life after a few months. Some when put into the earth will remain months before sprouting, while others will sprout before they are fairly out of their cups on the trees. The acorns of the Live Oak of the South, *Quercus virens*, often sprout before they fall. The process of germinating is among the most remarkable of all American trees. The root pushes out from the acorn to a distance of many inches before it enters the ground,—the root then goes into the earth while the bud or plumule ascends to form the incipient tree trunk. The young tree of the Live Oak will frequently be a distance of six inches from the acorn. In this respect the behavior of this species of oak corresponds nearly with what is almost universal in monocotyledonous seeds. Another early sprouter is the common White Oak, *Quercus alba*. These have not been known to sprout on the tree, but they scarcely reach the ground before the little radicle prepares to enter the earth. It does not wait to get to the surface of the earth before doing this. On shelves or boxes where there is some number of them together the whole will be a mass of roots before a few weeks after gathering. On the other hand the nut of the Burr Oak, *Quercus macrocarpa*, will remain a long time before showing any disposition to sprout. It is these varying characteristics which make rules for the transportation of seeds difficult,—each kind has to have a method of its own. So far as the two oaks are concerned it has been found better to send young plants long distances then the acorns themselves.

PURIFICATION OF DRINKING WATER.—It is well known that alum will remove organic and other matters from water so as to render it clear and pure; but it is now said that fluoride is superior to alum for this purpose. 1 oz. of fluoride is used to every 1000 gallons of water. After all, the best kind of purifier is nature's own. The minute organisms known as bacteria are the chief causes of the impurity of drinking water. These invisible creatures have to live as well as their larger brethren, and they must eat to live. As soon as they have eaten all in the water that there is to feed on they die. Dr. Frankland has recently stated, from his recent examination of water stored for two weeks, that it seems as pure and free from bacteria life as if it had been passed through the best of filters; but it seems strange that this should have so recently come under Dr. Frankland's experience. Every one knows that there is no purer or better water in the world than that which is supplied to seafaring people. Almost any kind of water stored away in a ship's tank becomes absolutely pure after the vessel has been a few weeks at sea. This is usually ascribed in popular language to fermentation; but there is really nothing to ferment, it is simply that the bacteria have eaten everything in the water there is to eat and then died of starvation.

WATER PLANTS AS LANDMAKERS.—One of the earliest surprises of the writer, on a botanical collecting trip, was to enter a wildwood on a beaten path, and on returning find a stream of some 20 feet wide and of unknown depth right across that path. It was his first experience with a floating island. The wind had changed, and blew the island to the opposite shore! When sand enough would be collected from the winds, possibly the island would sink, and then logs would be found beneath the surface, as White Cedar logs are now found below the surface in the bogs of New Jersey. How plants prepare the way for such growths, we have often had illustrated. "Captain W. A. Shaw," says a Jacksonville, Florida, paper of recent date, "of the St. Johns River steamer Everglade, says that he has never seen anything like the quantity of hyacinths as now float in the river between Palatka and Astor, and he has been in command of a steamer on the river for more than a quarter of a century.

Palatka is the worst choked up point on the river, as acres of the water vegetable cover the surface of the river, and to get through it with the steamer is a hard job. The wheels become clogged, the bow banked against, and it is going ahead and backing for hours at a time to make a passage.

Not only is the river obstructed, but also all the creeks between Jacksonville and Palatka."

Only for the river traffic, these water plants would be undisturbed, and in the end, dust and sand would grow moss and similar low orders of vegetation. On these, seeds of grasses and larger plants would be borne by birds and by the wind and, rotting, form a thick, peaty surface. Then come tree seeds, and the young forest, in time, sinking by its own weight. But the process again renewed from time to time, the whole would be filled up, and a deep peat bed formed, and real land appear in due time. Yes, water plants as well as all things have an appointed mission to fulfil.

HUMBLE-BEES AND CLOVER.—Mrs. Seliger, of Hartford, Conn., says: "Not a dozen bumble-bees, all told, have I seen this summer. Where were they, this year? And what possible effect could their absence have had on the fertilization of clover, if that theory, so long prevalent, were correct?" The bee and clover notion is unfounded.

VARIATION IN AN APPLE.—A correspondent in Vermont sends the following paragraph from the *Farm and Fireside*, and asks for comment on it :

"H. H. L., San Francisco, Cal., writes : 'In the spring of 1836 I was living in Parkman, Geauga County, Ohio. I had thirty or forty apple trees. Some men came along grafting apples, and I employed them to graft my trees, which were about six years old. They cut off the limbs and put in probably half a dozen grafts to the tree. When they got to bearing, one of the trees had one graft that bore apples of about medium size, and one-half of the apple was yellow and the other half green. The yellow half was sweet and the green half was sour. One graft bore apples one-fourth yellow and one-fourth green ; and again one-fourth yellow and one-fourth green. The yellow was sweet and the green sour. Can you tell how that could happen ?' "

The apple was probably the Rhode Island Greening, which is especially prone to play these pranks. In the East it is generally classed with the sub-acid varieties,—in California it is very often wholly sweet. Its habit, of having occasionally sections of the same fruit of different characters, is well known. Occasional variations in these and other characters are common in all kinds of fruits and flowers. Perfectly white stripes will, at times, appear in leaves normally green, and the white would have a different taste to the green. We do not charge these vagaries to grafting, crossing with other pollen, or any external influence, but to some obscure law operating in plants at all times.

COMPANION PLANTS.—It has been frequently noted, by botanical collectors, that where some particular species of plant is collected, one may reasonably look for some totally different one which seems to enjoy the special privilege of companionship with it. In a recent paragraph, mention was made that Mr. Raynal Dodge, of Newburyport, Mass., was preparing a new work on American ferns. Mr. Dodge has kindly sent us a proof sheet of the work he proposes to issue. The reference to the companion plant of *Ophioglossum vulgatum*, seemed of special interest to our readers in view of a recent paragraph regarding this plant. We copy it on this account as well as to give some idea of the scope of Mr. Dodge's very useful task :

"173. O. vulgatum L. Adder's Tongue. Stem simple, 2 to 11 inches high, bearing one smooth, entire leaf and a terminal spike. Usually in meadows in moist, not boggy places, scattered among the grass, etc. Overlooked rather than rare.

'A nearly constant companion plant in eastern Massachusetts is *Habenaria lacera*.' —*A. A. Eaton.* This orchid is quite conspicuous when in bloom, and *O. vulgatum* may be expected in its vicinity. Throughout the New England states, and nearly cosmopolitan. Middle of July.

Illustrated in Gray's Manual, and by Knobel."

A RED MILLFOIL.—Last summer, while gathering *Achillea Millefolium* for medicinal purposes I found in the middle of an acre or more of the white flowered species, a nearly circular space, of perhaps 10 feet in diameter, occupied entirely by the rose-colored species. Outside this spot, there was not another rose-colored flower in the whole field. Was it not singular ?

E. M. HALE.

Chicago, November 12th.

The beautiful rose-colored variety of *Achillea Millefolium*, so much valued in gardens, originated just as those noted by Dr. Hale did. Some one seedling produced rose-colored flowers, and the plant continues to reproduce itself by creeping root stocks, until the large area noted became covered by it. The law which induces these sudden sports from a normal character has never been developed, although the general law has been evolved. It is that color is dependent on the comparative intensity of the great struggle for life. Leaves color when their hold on life is weakening; and dry, hot, sandy deserts, and bleak, rocky mountain tops have the brightest and most beautiful flowers. This very Millfoil is an admirable illustration. In a latitude like Chicago, the plant would have little difficulty in holding on to its pure white character. As we journey northwestwardly, we find numbers with a tinge of pink,—the further northwest, still darker,—but when the bleaker regions of Alaska are reached, all are bright pink, and white becomes a variety. There are pretty rosy flowered species.

GENERAL GARDENING.

SLEET-COVERED TREES.

" Soon as the silent shades of night withdrew,
The ruddy morn disclosed at once to view
The face of nature in a rich disguise,
And brightened every object to my eyes ;
For every shrub, and every blade of grass,
And every pointed thorn seemed wrought in glass :
In pearls and rubies rich the hawthorns show,
While through the ice the crimson berries glow."
—CLARE.

THE SEASON IN MASSACHUSETTS. A correspondent from Martha's Vineyard, Mass., under date of November 10th, says :—"You will be interested to learn that there is a favored spot, in bleak and wintry New England, that has not yet been visited by frost, and where many of the summer flowers are still blooming in the open ground as gaily as at any time during their proper season : *Verbenas*, *Petunias*, *Scabiosa* and many others ; and where a second crop of potatoes, six inches high, are growing vigorously from tubers left in the ground when the crop was harvested in September. It is on the south side of Martha's Vineyard and the surrounding ocean, as also a large body of fresh water, tend to ward off the frosts of autumn as well as to modify the winter climate, which is 8 to 10° warmer than that of Boston, so that the *Hydrangea Hortensia* and the English Ivy survive the winter, and the Scotch Broom (*Genista*) has become almost naturalized in some parts of the Island, and I think other plants doubtfully hardy in Boston would flourish here.

With cordial appreciation of my long-time friend the MONTHLY.

Very truly yours,
WM. L. FOSTER."

GARDENING IN BRITISH COLUMBIA.—Some sixteen or seventeen years ago the writer of this paragraph had the good fortune to spend a short time in various parts of British Columbia, and was quite enthused with the prospects apparent for successful gardening in that distant land. Victoria was already a place of some importance, and the cottages were covered with the ivies, the honeysuckles, and the China roses, which give such a charm to the cottage gardening in England. The "gowans fine," which "in Auld Lang Syne" had excited the sentimental affections of the people of Great Britain, had already taken complete possession of the "banks and braes" around the town,—and it was quite evident that any fruit or flower at home in England would be equally happy here. Even as far north as Nanimo, where we were approaching the Arctic Circle, and coal miners had settled too recently to have any introduced plants for the visitor to see, the native roses, gooseberries, and currants were growing everywhere in wonderful luxuriance,—while the forest trees were of such large growth that showed what the apple, pear, cherry and plum would do if they ever had a chance. With all this in the writer's mind, the recent report of Dr. William Saunders, the Director of Canadian Experimental Farms, of a visit to British Columbia, possessed a double interest. He says that a large quantity of fruit has been produced in British Columbia and the shipments to Manitoba and the Northwest Territories have been large. The area under orchard has been much increased during the past few years and the fruit crop is becoming increasingly important every year.

Until recently, Dr. Saunders says, the planting of fruit trees in British Columbia was confined to the valley lands, but from the experiments conducted at Agassiz it has been shown that the higher bench lands and the smaller areas of arable land on the sides of the mountains are most valuable for this purpose. Four orchards, including in all about 900 trees of many varieties, have been planted at different heights ranging from 150 to 1,100 feet. The trees at these different elevations are all doing well and are making a strong and healthy growth. When Britain disappears beneath the waves, British Columbia, will revive her garden glory.

GARDEN NOTES.—I would like to tell you of a cactus which I have had blooming this season in the greenhouse, and which I thought bore unusually many flowers, having as many as 45 blooms in one night. The plant bearing the flowers is about 9 feet high and about 4 feet across. The name is *Phyllocactus latifrons*.

Do you not think birds ought to be more protected about this part of the country? Our useful garden birds are scarce now, chiefly owing to boys collecting eggs, and using rubber slap-jacks to kill them. Look at our apple trees. How full of holes they are from the wood-pecker! That bird is gone. When they were abundant we had good fruit of every kind; but now we are plagued with all kinds of insects owing to the scarcity of birds. I think those birds were all created for some good purpose. I think parents ought to instruct their boys not to shoot insect birds. I think there ought to be more strict laws against killing the birds. It is worth the loss of a small portion of the fruits to have the birds. Without them I think we cannot have fruit at all. I try hard myself to protect the birds all I can, for I have watched them so much from day to day, and I know what good they do. We cannot even raise a head of cabbage for the green worm, which the little tom tit kept so clean, and they are so scarce now. I hope I have said no harm, but that the birds will be better protected in the future than they have been in the past, because of their usefulness. Just think about 15 or 20 years ago, how the woods used to ring with their sweet notes, now we do not hear them any more. Pardon me if I have said too much.

MARTIN CONSTABEL.

Philadelphia.

The writer was interested in noting the frequent visits of the English sparrow to the little cabbage patch in a neighbor's garden, for the smooth green cabbage worm with which it fed its young in the nest near by. But these did not materially lessen the crop of caterpillars. The little block of some two dozen plants were completely skeletonized.

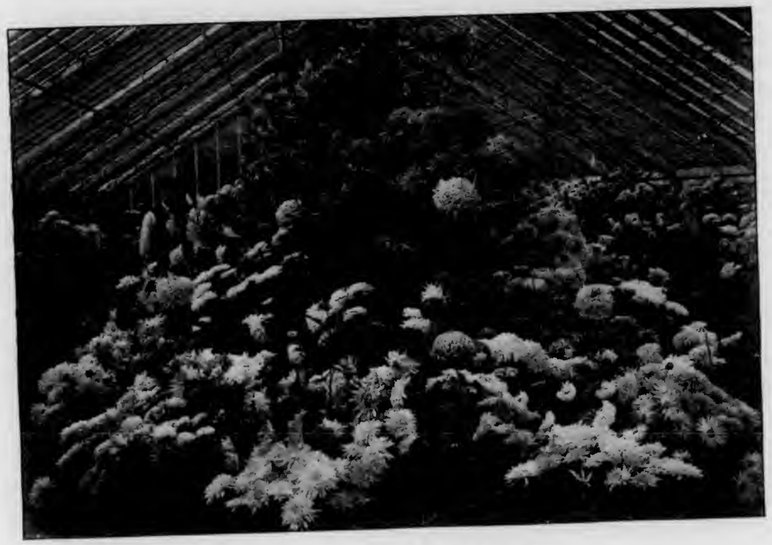
ORCHID CULTURE. — Many suppose that orchids require very high temperature in order to have them grown to perfection. This may be true of some species, but the great majority are well satisfied with what will be termed the temperate degrees of heat, providing there is sufficient atmospheric moisture in the house in which they are growing, and, in some instances, partial shade. It may be said, however, that in cases where orchids grow naturally, the finest plants are usually found growing on trees in the open sunlight rather than in the dense shade of woods. Very many species will grow in temperatures between 40 and 60°. Last year, the writer of this paragraph saw a specimen of the Mexican *Maxillaria Deppei*, growing in the conservatory attached to a lady's sitting room, with scores of blossoms, and the plant was healthy as it was possible to be. This plant was growing in a wire basket with moss and rotten wood. The temperature of the little conservatory was scarcely more than 45 or 50°. In the same house, native tree orchids of Florida, which had been brought by the lady herself, were growing in great luxuriance and flowering in profusion. Indeed, they seemed so much at home that numbers of them produced seed vessels, a very rare occurence in the orchid family under glass, as it is generally supposed that they will not produce seed unless they have received pollen from insect agency. It is supposed that insects had in some way fertilized this Florida orchid, but as there were many other species of orchid in this same conservatory, but which did not produce seed vessels, it is scarcely credible that the insects confined their attention to these Florida species. The main point that is wished to be impressed upon the reader is that more pleasure may be had, in the ordinary small conservatory attached to the dwelling house, by cultivating orchids, than is generally thought possible.

SINGLE DAHLIAS.—It is curious to watch the changes of fashion in regard to popularity in flowers. A few years ago there was a great rush for single Dahlias, and they were really beautiful; of late years, however, they are rarely seen. The misfortune with the old Dahlias frequently is they bloom rather late in our climate, and are no sooner in full force than the frost is ready to dispute possession with us. In the Old World, the Dahlia is yet popular. In France, they have succeeded in getting varieties of Dahlias with new double disk flowers. Usually, where the Dahlia is improved, the disk florets become strap-shaped.

SENATOR CAMERON'S GREENHOUSES — A Harrisburg, Penna., paper has the following interesting notice of the gardens of Senator Cameron, under date of Nov. 10th.:

"Mr. Albert Millard, in charge of the extensive greenhouses of Senator Cameron at Lochiel, is always glad to show visitors the magnificent collection of flowers and plants. All persons interested in flowers are welcome. It is a delight to visit such a place. Here may be seen one hundred varieties of the "queen of autumn," the Chrysanthemum, some standards eight feet high and laden with big and well cultivated flowers. One house is filled with American Beauty roses, another with roses in fourteen varieties, still another with palms and orchids, two with carnations, violets and lettuce ready to cut, one with ripe tomatoes, another with cucumbers which will be ready for Thanksgiving, one with the finest lot of Cinerarias and primroses to be seen anywhere, and one with ferns and foliage plants beautiful to look upon. The Chrysanthemums are arranged in two large grape-forcing houses. Outside are violets in four of the best varieties, grown under glass, and apparently enough for a great florist business. During the great storm on the 30th of September, three hundred of the best Chrysanthemum plants were broken, but there are almost eight hundred plants left."

With this extract it has been thought instructive to give an illustration from a photograph of the Chrysanthemums as they appear in the grapery. Usually a cold grapery—one of the most pleasing adjuncts of a garden when in foliage and fruit—is among the most forlorn during the resting season. It shows the skill of the good gardener to make such a house attractive at all seasons.



SENATOR CAMERON'S GREENHOUSE.

GETTING RID OF TREE STUMPS.—In many gardens where large trees blow down, or fall in some other way, tree stumps become a serious inconvenience, and the question often arises as to how best to remove them. The writer recently saw a case of this kind in which augur holes were being made and gun powder used to blow the huge stump into fragments. In many cases this is not a desirable practice. It is not difficult to get rid of the stump by first chopping off some of the long roots with an axe, and the digging a deep hole near and with a lever rolling the stump into the hole, thus burying it. It is by no means a costly way of getting rid of an expensive trouble. Many a tough job may be lightened by a little forethought.

GARDEN NOTES.—I would like to tell you of a cactus which I have had blooming this season in the greenhouse, and which I thought bore unusually many flowers, having as many as 45 blooms in one night. The plant bearing the flowers is about 9 feet high and about 4 feet across. The name is *Phyllocactus latifrons*.

Do you not think birds ought to be more protected about this part of the country? Our useful garden birds are scarce now, chiefly owing to boys collecting eggs, and using rubber slap-jacks to kill them. Look at our apple trees. How full of holes they are from the wood-pecker! That bird is gone. When they were abundant we had good fruit of every kind; but now we are plagued with all kinds of insects owing to the scarcity of birds. I think those birds were all created for some good purpose. I think parents ought to instruct their boys not to shoot insect birds. I think there ought to be more strict laws against killing the birds. It is worth the loss of a small portion of the fruits to have the birds. Without them I think we cannot have fruit at all. I try hard myself to protect the birds all I can, for I have watched them so much from day to day, and I know what good they do. We cannot even raise a head of cabbage for the green worm, which the little tom tit kept so clean, and they are so scarce now. I hope I have said no harm, but that the birds will be better protected in the future than they have been in the past, because of their usefulness. Just think about 15 or 20 years ago, how the woods used to ring with their sweet notes, now we do not hear them any more. Pardon me if I have said too much.

MARTIN CONSTABEL.

Philadelphia.

The writer was interested in noting the frequent visits of the English sparrow to the little cabbage patch in a neighbor's garden, for the smooth green cabbage worm with which it fed its young in the nest near by. But these did not materially lessen the crop of caterpillars. The little block of some two dozen plants were completely skeletonized.

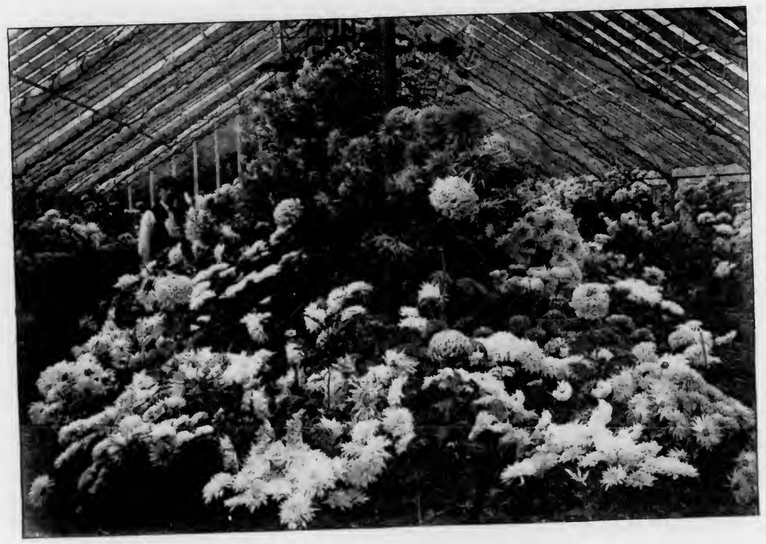
ORCHID CULTURE. — Many suppose that orchids require very high temperature in order to have them grown to perfection. This may be true of some species, but the great majority are well satisfied with what will be termed the temperate degrees of heat, providing there is sufficient atmospheric moisture in the house in which they are growing, and, in some instances, partial shade. It may be said, however, that in cases where orchids grow naturally, the finest plants are usually found growing on trees in the open sunlight rather than in the dense shade of woods. Very many species will grow in temperatures between 40 and 60°. Last year, the writer of this paragraph saw a specimen of the Mexican *Maxillaria Deppei*, growing in the conservatory attached to a lady's sitting room, with scores of blossoms, and the plant was healthy as it was possible to be. This plant was growing in a wire basket with moss and rotten wood. The temperature of the little conservatory was scarcely more than 45 or 50°. In the same house, native tree orchids of Florida, which had been brought by the lady herself, were growing in great luxuriance and flowering in profusion. Indeed, they seemed so much at home that numbers of them produced seed vessels, a very rare occurence in the orchid family under glass, as it is generally supposed that they will not produce seed unless they have received pollen from insect agency. It is supposed that insects had in some way fertilized this Florida orchid, but as there were many other species of orchid in this same conservatory, but which did not produce seed vessels, it is scarcely credible that the insects confined their attention to these Florida species. The main point that is wished to be impressed upon the reader is that more pleasure may be had, in the ordinary small conservatory attached to the dwelling house, by cultivating orchids, than is generally thought possible.

SINGLE DAHLIAS.—It is curious to watch the changes of fashion in regard to popularity in flowers. A few years ago there was a great rush for single Dahlias, and they were really beautiful; of late years, however, they are rarely seen. The misfortune with the old Dahlias frequently is they bloom rather late in our climate, and are no sooner in full force than the frost is ready to dispute possession with us. In the Old World, the Dahlia is yet popular. In France, they have succeeded in getting varieties of Dahlias with new double disk flowers. Usually, where the Dahlia is improved, the disk florets become strap-shaped.

SENATOR CAMERON'S GREENHOUSES — A Harrisburg, Penna., paper has the following interesting notice of the gardens of Senator Cameron, under date of Nov. 10th.:

"Mr. Albert Millard, in charge of the extensive greenhouses of Senator Cameron at Lochiel, is always glad to show visitors the magnificent collection of flowers and plants. All persons interested in flowers are welcome. It is a delight to visit such a place. Here may be seen one hundred varieties of the "queen of autumn," the Chrysanthemum, some standards eight feet high and laden with big and well cultivated flowers. One house is filled with American Beauty roses, another with roses in fourteen varieties, still another with palms and orchids, two with carnations, violets and lettuce ready to cut, one with ripe tomatoes, another with cucumbers which will be ready for Thanksgiving, one with the finest lot of Cinerarias and primroses to be seen anywhere, and one with ferns and foliage plants beautiful to look upon. The Chrysanthemums are arranged in two large grape-forcing houses. Outside are violets in four of the best varieties, grown under glass, and apparently enough for a great florist business. During the great storm on the 30th of September, three hundred of the best Chrysanthemum plants were broken, but there are almost eight hundred plants left."

With this extract it has been thought instructive to give an illustration from a photograph of the Chrysanthemums as they appear in the grapery. Usually a cold grapery—one of the most pleasing adjuncts of a garden when in foliage and fruit—is among the most forlorn during the resting season. It shows the skill of the good gardener to make such a house attractive at all seasons.



SENATOR CAMERON'S GREENHOUSE.

GETTING RID OF TREE STUMPS.—In many gardens where large trees blow down, or fall in some other way, tree stumps become a serious inconvenience, and the question often arises as to how best to remove them. The writer recently saw a case of this kind in which augur holes were being made and gun powder used to blow the huge stump into fragments. In many cases this is not a desirable practice. It is not difficult to get rid of the stump by first chopping off some of the long roots with an axe, and the digging a deep hole near and with a lever rolling the stump into the hole, thus burying it. It is by no means a costly way of getting rid of an expensive trouble. Many a tough job may be lightened by a little forethought.

INTENTIONAL SECOND EXPOSURE

PLANTS FOR THE WINDOW-GARDEN.—As comparatively few plants are adapted to stand the drying atmosphere of the living room, a list of those that have proven best for the decoration of the window garden may be of some use.

Plants of ornamental foliage or graceful habit are best suited for the window garden. More light, as a rule, being required for the proper development of perfect flowers. The flowering plants should have the sunniest spot near the glass. The foliage should be frequently sponged, using a little carbolic soap, (two ounces to one gallon of water), to keep free from dust and insect pests. The pots should be clean and well drained, and, if saucers be placed under them, no water should be allowed to remain in them, as this causes the soil to sour and is a very frequent cause of failure. Water should be given only when the plants need it, and then give them a thorough soaking. Never keep the soil in a soggy condition, as no plant, except an aquatic, will stand such treatment.

As to the tasteful arrangement of the plants, directions are not necessary. The enthusiastic amateur is generally ahead of the practical gardener in this respect. Very good effect is often produced with small materials. Hanging baskets filled with suitable plants should not be omitted, as they give a graceful finish to the whole. Ornamental foliage plants: One of the best for standing heat and a dry atmosphere is the Bow-String Hemp, *Sanseviera Zeylanica*, a very good plant for Japanese vases, etc. *Peperomia maculosa*, a low-growing plant with beautiful silver-marked foliage. *Pellionia pulchra*, a low-growing plant of trailing habit. *Panicum variegatum*, an ornamental grass suitable for hanging baskets, as are also *Tradescantias* in variety, *Senecio mikanoides*, the German Ivy; *Othonna crassifolia* and variegated varieties of the "English" Ivy, *Hedera Helix*, are also useful.

Palms, as a rule, stand the dwelling house well, and are also useful for table decoration. The following may be mentioned as among the most suitable. *Phœnix rupicola*, *Geonoma gracilis*, *Pritchardia grandis*, *Areca lutescens*, *Livistonia rotundifolia*, and the beautiful dwarf fern-like *Cocos Weddeliana*.

The most suitable flowering plants are: ivy-leaved geraniums, *Lobelia erinus* and flowering Begonias. *Lopezia coronata*, sometimes called the "Mosquito Plant," is also suitable for window culture.

Bulbs.—A judicious selection of flowering bulbs,—such as hyacinths, in glasses and pots, Freesias, "Chinese Sacred Lilies," which open their flowers in fancy bowls filled with gravel and water, add color and fragrance to the scene.

Orange, N. J. WM. FITZWILLIAM.

RURAL AFFAIRS IN LOUISIANA.—A few days ago, I was requested to visit some gentlemen up the Jackson Railroad (now the Southern branch of the Illinois Central), to confer with them about some plans of development they have in view; inviting immigration; building a town, etc. On the trip, my thoughts were running much on you (Senior Editor); for it is the country you twice visited, as my guest, when you came South in 1874 and 1875-'76, and so kindly and effectively lent me your aid to help develop that country through immigration, raising fruits and vegetables, etc. That was a day of small things, in fact, but of large hopes, and what, then, seemed large, and even extravagant predictions on my part, although far below the actualities of to-day. Then not a strawberry patch of the size of an acre, in Mississippi. Not an orchard of any fruit worth the name. Not a living soul in the State raising vegetables for early (or late) shipments West. Not a town (or a hint of one) save McComb City, which I was building in the interests of your great townsmen Col. Tom Scott and Col. H. S. McComb, of Delaware. Not an immigrant, except the northern and western men I had brought in at McComb, as mechanics. And the country almost an unbroken forest, from Crystal Springs, Miss., to New Orleans, La.

And now the immigrants are innumerable. Several new towns, out and out, composed almost exclusively of northern and western men, have been built. Fruit and vegetable raising are enormous interests. At one place, Crystal Springs, everybody for miles around is at one or both of these vocations. I estimate that 1,500 people, in a radius of a few miles, are engaged therein, black and white. Forty acres of melons, or cabbages, or tomatoes, or some other crop is not uncommon for one individual. At another station one man had 100 acres of strawberries. Crystal Springs loads some days over 40 cars of tomatoes. The hotels will hardly hold the buyers from northern cities thronging there to secure the celebrated tomato raised there. And Copiah County is, I have no doubt, the banner truck county of the United States, and the greatest vegetable centre on earth.

And, yet, she is not half developed. Indeed the utter disparity of development is one of the surprises of the situation. One little station, with hardly a dozen houses, ships a score or more cars every day during the season, while the county-seat ships none.

Another very absurd thing is the enormous disparity in prices of land. If you get anywhere in or near these northern towns, you must pay from $30.00 to $100 or more per acre for land, of identical character with that which can be bought at $5.00, or even less, per acre. Thus, for instance, I saw land in this banner County of Copiah, where a reputation has been made for its fruits and vegetables of incalculable value, where healthfulness, climate, railroad facilities are unsurpassed, for sale at $5.00 per acre, while inferior land is selling at $75.00 per acre elsewhere.

It is one of the aims of the gentlemen, who sent for me, to see if I could not devise some plan to overcome this ridiculous state of affairs. My suggestion was, to buy a town-site, lay off lots; give away a lot each to anyone from the north or west who would build a respectable house, donating 50 or more lots; lay off lots near the town, in tracts of 5, 10 and 20 acres, and sell at $10.00 per acre, reserving a goodly number for the company; to sell but one tract to each person, so as to prevent speculation. If this be done, it offers a certain chance to buyers, and a chance of some profit to the organizers. I presume the plan will be consummated.

I suggest that they especially emphasize the rare healthfulness of the country and abstain from encouraging people who come to settle, to believe they can make a fortune in a year or two by raising fruits and vegetables. I believe no place in the South is more eligible for money-making in the above lines; but the number of people who can be deluded into believing they can get rich in a short time, by coming South, and devoting themselves to these vocations, is incredible. The real-estate sharks and speculators are, all the while, reaping rich harvest, from the deluded dupes who take their exaggerated statements for truth.

As you were a prominent worker, so long ago, in promoting the development of the Jackson railroad, you may well congratulate yourself on the outcome of your labors.

At that time, my forecast seemed all too wild. But, far more than I predicted has come to pass. And the development is only fairly started. Not only will the fruit and vegetable business be greatly enlarged; but the wealthy will soon be building winter-homes there, and invalids suffering from pulmonary troubles, neurotic complaints, rheumatism, and other ailments, will be seeking it as one of the choicest sanitariums of the South.

M. B. HILLYARD.

New Orleans, La.

NEW OR RARE PLANTS.

A NEW RACE OF ROSES.—A recent issue of the London *Gardeners' Chronicle* tells us that an entirely new race of hybrid tea roses has been introduced into that country which seems likely to become popular. It is the well-known La France type. Of this new rose it is said that the great effort now with rose growers is to produce a La France that shall be absolutely pure white.

ASPARAGUS SPRENGERI.—The different species of twining Asparagus from South Africa, as *A. plumosus*, *A. crispus* (*decumbens*), are among the most useful of all the decorative materials in use by florists. *Gardening Illustrated* observes that a new one it calls *Asparagus Sprengeri* is one of the most distinct kinds, and it should be popular with cut-flower lovers. Some of our readers doubtless saw the beautiful large specimen plant exhibited by Mr. A. Blanc at the recent Chrysanthemum Show held in Philadelphia.

ERIGERON HYBRIDUS ROSEUS.—Erigerons in our country are best known by the common name White-weed, or American Fleabane, which is a common weed especially in hay fields. This is *Erigeron annuum*. It is not ornamental; but many of the genus are. There is a very pretty species from Asia Minor, of an orange color, and quite dwarf,—and a paler one, *E. Villarsii*, from Northern Europe. A very pretty variety of one or the other is to be sent out this spring, under the name of *E. hybridus roseus*.

THE ROCKY MOUNTAIN BRAMBLE.—Mr. Jacob W. Manning says:—

"*Rubus deliciosus*, the Rocky Mountain Bramble, is very hardy with us and of neat habit of growth, with foliage of a pleasing light green, and a wealth of rich white flowers in June and July; each an inch and a half across, giving the effect of single roses."

PEREskia BLEO.—This member of the cactus family has leaves resembling an orange. Though often seen in old collections of curious plants, it is rarely found in flower. The London *Gardeners' Chronicle* figures one that flowered recently at Kew. It has a head of rosy flowers, nearly as large as that of a hydrangea, and each cactus-like flower as large as a single barren hydrangea bloom. It is a native of Mexico, and would be a grand ornament in those parts of our country free from frost.

DWARF OAKS.—Oaks, as garden ornaments, are rising on the wave of popularity,—and Mrs. Seliger well remarks that the bushy kinds ought to be as popular as shrubs, as the larger kinds are as trees. She says:—

"Very pretty and interesting are our dwarf oaks. Some, for their beauty, might find a place in the garden. The little Chinquapin or Chestnut-leaved (*Quercus prinoides*), bears acorns when only two feet high. Another (*Q. ilicifolia*), with thick and pronounced oak leaves of a dark green color, is this season loaded with acorns in bunches together, making a fine show. Then the rich red bronze of the October leaves makes an added reason for admiring these young oaks—some of them.

THE HARDY FLOWER GARDEN.

PENTSTEMON BARBATUM. — Possibly few hardy herbaceous plants give more satisfaction than *Pentstemon barbatum*, sometimes called in catalogues *Chelone barbata*. It commences to bloom about mid-summer and continues for nearly two months. The bright crimson, somewhat trumpet-shaped flowers are produced in the greatest profusion. It stands the heat of our ordinary summers very well,—indeed, it is found in the dry and hot regions of northern Mexico and the Rocky Mountains. At any rate, in our eastern gardens, we have never known it to suffer from even the hottest or the dryest seasons. It is readily propagated by division of the root stock, and the seeds also grow quite freely, although not blooming until two years old.

TREE PÆONIES.—Amateurs usually have a number of plants which grow to some little size, and which are known as tub-plants, that are easily transferred during the winter and yet form striking beds when placed in judicious situations on the lawns in the summer time. Oranges, lemons, hydrangeas, oleanders, yuccas, pomegranates and other similar plants will readily come to the mind of the reader. One of the most desirable of this class of tub-plants is very rarely seen, namely, the Tree Pæony. As usually seen in gardens, they do not make much of a show, because it takes many years before they can grow to large specimens. Each shoot only makes two or three buds a year, and each of these buds will make a flower the year following; but, in five or ten years, a bush in flower presents a striking appearance. A large Tree Pæony is usually considered of great value. A ten or twelve year old plant would be worth nearly as many dollars as it had been years growing. It is a never ceasing object of growing interest.

ASTERS IN GARDENS.—We seldom prize that which we can get easily. The poet says that the brightest pearls are only obtained by diving in the deepest water. There are few more beautiful flowers than are comprised in our troop of native Asters, and yet, how rarely do we find them admitted to our gardens. The larger portion of this family are natives of North America. In the Old World, it is getting quite common to have what are now known as Aster Gardens, and these are mostly made up from the forms which are so common and so well known in our country. One objection would be that the Aster garden presents but little attraction until after mid-summer, as none of them bloom at all, until after that date. They are essentially autumn flowers; but the skill of the good gardener can be called in, and so arrange that there would be something especially attractive in connection with the Aster Garden during every month of the year. It is just in matters of this kind that the skill of the good gardener makes itself evident.

FRUITS AND VEGETABLES.

VARIATION IN APPLES.—Mr. T. S. Gold, the eminent pomologist of the Connecticut State Board of Agriculture writes:

"The account of the pear grown with the apple interests me personally, as I have had the same vagary on one of my trees.

I send you, by this mail, copy of our report for '88, with illustrations of the fruit."

It brings up the whole subject of variation in apples, which many believe comes from cross-fertilization, but others, more properly, perhaps, refer to the natural variation which seems to be a law of nature in all organized beings. No two shall ever be exactly alike,—but all must vary within certain limitations.

The apple referred to by Mr. Gold, we reproduce through the kind courtesy of the officers of the State Board. The Pearmain, in its normal condition, is a rather flat apple, and very different from the fig-like form of the "sport." No one knows with certainty how the name "Pearmain" originated. There is no doubt that during the several hundred years since this variety of apple was first known, it may have occasionally produced these elongated pear-like forms. Mr. Gold suggests that in this light we may trace the origin of the name. This has been before suggested by some authors, but, when we get to the supposed derivatives, the explanation degenerates to a mere guess. The apple is of French origin, and we must look to some French word, and not to the English pear, for its origin.

THE PEARMAIN APPLE SPORT.

In old English gardening works, the Pearmains seem to be about the only varieties written about. The apple now referred to by Mr. Gold is the old Herefordshire Pearmain, about which Gerarde writes in the following extract:

"I have seene in the pasture and hedge rows about the grounds of a worshipfull Gentleman dwelling two miles below Hereford, called Master Roger Bodnome so many trees of all sorts that the servants drinke for the most part no other drinke, but that which is made of apples. The quality is such, that by the report of the Gentleman himselfe, the Parson has for tithes many hogsheads of Syder. The hogs are fed with the falling of them, which are so many that they make choise of those apples they do eate, who will not taste of any but of the best. An example doubtlesse to be followed of gentlemen that have land and living; but envie saith the poore will breake downe our hedges, and wee shall have the least part of the fruit; but forward in the name of God, graffe, set, plant and nourish up trees in every corner of your ground; the labour is small, the cost is nothing, the commodity is great, yourselves shall have plenty, the poore shall have somewhat in time of want to relieve their necessite and God shall reward your good mindes and diligence."

This was in 1636,—but long before this it was recorded by those who wrote in Latin, and as of two forms,—*Pyrus aestiva*, or the summer Pearmain, and *Pyrus hyemelia*, the winter Pearmain. Just how nature proceeds to make these changes has not been demonstrated, though, in some way it must be in connection with varying degrees of the plants own vital energy.

While these lines are being penned, come some curious specimens from Mrs. W. A. Kellerman, of Columbus, Ohio. The larger part of the old tree bore these apples towards the end of summer instead of in the spring as a well behaved apple should do. It is known by the owner as a "pippin" only,—but the leaves sent with the fruit show it is not a Pearmain. It so happens that the writer had a case like it on one single branch of an apple in his own orchard, which by watching from day to day revealed clearly the "*modus operandi*," as the learned would say.

It may be premised that the little short branch or spur, that bears the apple flower, might have been an ordinary apple twig with-

out any flower at all. An apple flower is simply an arrested branch.

In this case, the flower buds were partially formed before the branch was finally arrested, so that when the spring came, it resumed business as a branch, and the flower buds at the apex continued also to perfect themselves. By about midsummer the flower buds were perfected and the fruits followed. But even these were in a state of uncertainty as to whether they should go on as branches or remain as fruits, and hence the elongated form. Cutting them through transversely shows this plainly, as the lower portion below the core, is much more woody than usual. The cluster of fruit is therefore at the end of a branch of this season, instead of proceeding from an ordinary spur, because the growth energy had not been wholly arrested as in the normal condition,—and the valuable deduction can be safely drawn, that form—that is to say species and varieties—is the result of various degrees of life energy.

MONTHLY STRAWBERRIES. — Everbearing strawberries have, as a rule, proved utterly useless as far as the realization of a large and steady crop is concerned; a few berries may be gathered from a bed off and on for several months, but it is more novel than profitable. It was with much pleasure that the editors were advised of an improvement over these so-called everbearing strawberries by fruit sent to the office by Mr. Wm. J. Mangan, gardener to B. Borie, Esq., Jenkintown, Pa., about the middle of November. They were small, but sweet and pleasant, and were produced in very fair quantities throughout the season. Mr. Mangan kindly furnishes us with extracts showing the manner of cultivation and propagation. While these berries will not take the place of the varieties now in commercial use, yet they open up a field for development, besides their real value to the private gardens.

"Five grammes of strawberry seed, 'Belle de Maux,' is enough for 1,000 plants. The success of raising them is easy. Plant the seed and cover lightly with earth and sand; put in shade and dampness. Replant them when they have two or three leaves, and if properly cared for they will bear fruit by next May.

The monthly strawberry is very different from the wild strawberry; it is the *Fragaria vesca semperflorens*, which is sometimes, but improperly, called the Strawberry of the Alps. Certain better varieties such as Janus Duru, and those with white fruits, are very often cultivated in gardens. The plant "Gaillon" (the same as the monthly strawberry without runners) has been much praised but is not considered as good.

The cultivation of monthly strawberries is not difficult. However, certain precautions must be taken which it is well to speak of here. In regard to their production by shoots or by seeds the raising of young plants in the hot house, the setting out of them, and the care needed for them until after the gathering, is information and details known by many, but which may be useful to others.

The great advantage of the monthly strawberry is its production from the beginning of June until the frost wins a slight diminution towards the end of July; moreover, the fruit is firm and of good flavor.

A planting should not be left more than two years; after that the fruit is poor. To keep the stock up and increase them every year, there should be in the garden some from slips and some from seeds to be used for the planting of the next year, taken from the plants of one or two years' growth. These should be done away with in the autumn after the gathering.

The way to increase plants is from shoots, or by seed, the latter being the most preferable, provided they are well cared for and the seeds have been well chosen. Let us speak of both ways:

(*a.*) *Increase by Shoots.*—To begin with you can take shoots from one year's growing; those taken from this second year's growth are not as productive. Instead of taking all the shoots the plants have produced in the spring, you must leave two or three of the best on the stalk, and towards the middle of July transplant these into the hot-house. This is the easiest but not the best way. The best way is to obtain the plants from the young stalks used for seeding, planted and treated especially for the production of runners. For this, here are the directions: Dig a bed (about one and one-quarter yards in length), make two rows about one-half yard from the edge, plant the young strawberry plants that have come up

from seed, then when there are four or five leaves, distance them about one-quarter yard. The runners will spread upon the bed; these roots will be strong enough by the end of the summer after having been put in the hot-bed once or twice as we will see later. The plants thus obtained are less strong and less leafy than those obtained by seed, but they give good fruit; it is well recommended.

(*b.*) *Increase by Seed.*—The monthly berries grow well from seed, which must be taken at the proper season from choice plants. The seed should be taken in August and from plants the most productive at that time. The plants which have medium foliage, not too thick, and numerous flowers and good fruit, are those which should be chosen for seed, and should be marked as such. Only the best of the fruit should be kept for seed. Crush the strawberries, but without water, and put the pulp in the shade to dry, rub it then between the hands, and add some fine sand, which separates the seeds, and sift them gently. Treated in this way the seeds are good for three years; those usually sown are from last year's gathering. The same care is necessary for all fine seeds. Sown where it is in the sun all day, the seeds sprout better than in shade (they grow better and stand the replanting better) but great care must be used to see that the young plants are not scorched by the sun. Dig up the ground well and in a good exposure; sow thickly; cover the seed with about two inches of rich soil (peat), water regularly to keep the soil fresh, but not too damp. The sprouting begins according to the temperature eighteen or twenty days after the sowing.

While they are sprouting, and until the young plants are strong enough, great care must be taken that the sun does not scorch them. A light screen is very useful in the middle of the day. Very often the growers sow the seed under glass instead of the open air. There are certain advantages this way; the seed sprouts quicker, more regularly, and takes root quicker in the planting. It is needless to say that this way requires more care, and that these rules are the same as for those planted in the ground. The best time is the end of March or beginning of April. The hot-beds made especially for this purpose or having already been used for other planting, it should be kept at fifteen or eighteen degrees (centigrade); the soil about three or four inches below the frame, and a mixture of soil and rich earth (peat). The seeds are sprinkled broadcast, and are covered up like those out of doors. They come up in about twelve days or two weeks after sowing, care being taken that the plant is not scorched, and accustom the plants gradually to the air before re-planting, which takes place when the plant has four or five leaves.

Re-planting in Greenhouses.—Whether the plant has been raised from a cutting, or in the

A BUNCH OF SPORTING APPLES.—SEE PAGE 18.

hot-bed, or in the open air, it should never be planted out directly; it must be re-planted in a greenhouse. This is important, whether it be in the cultivation of large strawberries or of the monthly strawberry. Another point of equal importance, is never to use the shoots taken from an old stalk which has itself been raised from a shoot, as in that way only medium fruit is obtained, small and round instead of the long berry. When the plant has four or five leaves, as we have said before, it is re-planted in a hot-house. To do this dig a bed in a good exposure, and manure it well, this is again covered with about two inches of leaf mould. Make rows a quarter of a yard apart, at a depth of about two inches and plant in fives (×) about every quarter of a yard on the row. The plants are pulled up carefully, chosen of equal size, and planted two by two. If the roots are too long shorten them with a pruning knife. Plant with a trowel (dibble) and prevent them from spreading, watering enough to prevent withering. Rainy and dull weather is preferable; if dry and warm, cover the bed for the time.

Seeds planted the first day of May are good to replant in the last two weeks of June. After this replanting, water frequently and the taking root is complete in about a week. The plant thus treated becomes strong and grows large; the runners and buds appear which you must be careful to take off to strengthen the growth. Weeding, of course, is necessary. The beginning of August the plants are already very strong, and you wonder whether it would be better to leave them in the greenhouse until October, the time of their planting out, or if they should have a second replanting.

This last way is considered the best; it takes, however, a little longer, but the roots grow thicker. About the first of August get a well-manured bed ready for the replanting, make the rows ¼ yard apart, and put the plants in the row not quite a quarter of a yard apart. Moisten thoroughly for a few days before, and with a trowel dig up the plant with plenty of earth around it. Shake off earth to show the roots; trim them with a pruning knife and at the same time trim the plant—that is to say, take off the bad leaves and runners; plant in the row, burying about half an inch above the top and moisten to keep fresh.

The end of September or beginning of October, whether the plants come out of the first or second greenhouse, set out so that they will be well-rooted before winter."

Ripening of Pears.—"Some of the so-called second-rate varieties of pears can be greatly improved by special treatment. What may be termed artificial ripening is not only a means of considerably lengthening the season of notoriously bad keepers, but also of surprisingly improving the quality of some of them. Then, again, early and second-early varieties are often left hanging on the trees too long, the result being mealy fruit, which only keeps a short time. Williams' Bon Chrétien [known in America as the Bartlett] is the most familiar instance of this. It is the behavior of this and somewhat similarly constituted pears that has given rise to the old saying, that one has to sit up all night in order to catch the fruit at the right time for eating. Now if the natural time of maturation of seeds or pips was anticipated by at least a fortnight and a portion of the crop gathered and ripened artificially, successional gatherings following every fourth day or so, every fruit from a large tree might be utilized and none spoilt. The most delicious fruit of this variety that falls to my lot each year is ripened a little in advance of its natural season. Souvenir du Congrès is also becoming popular hereabouts. This resembles Williams' Bon Chrétien in most respects, only it is later in ripening. Artificial ripening of a portion of the crop in this case again has the effect of improving the quality, and also of bringing out the color on this, to my thinking, grand September Pear."

—*Gardening Illustrated.*

The Season's Apple Crop.—In the apple growing regions of New York. the crop is so enormous as to be in some cases profitless to gather. In Wayne County, instead of barreling, they are turning them into dried apples. Evaporators have been curing some 300 bushels daily.

California Apples.—California has now thrown down the gage of battle to the Eastern apple grower. Up to the eighth of October, twenty-eight carloads of the yellow Bellflower had been shipped last from Watsonville.

BIOGRAPHY AND LITERATURE.

THE FURZE-LINED SCHOOL ROOM.

Besides yon straggling fence that skirts the way,
With blossomed furze unprofitably gay,
There, in his noisy mansion, skilled to rule,
The village master taught his little school;
A man severe he was, and stern in view,
I knew him well, and every truant knew,
Well had the boding tremblers learned to trace,
The day's disasters in his morning face;
Full well they laughed with counterfeited glee,
At all his jokes, for many a joke had he;
Full well the busy whisper, circling round,
Conveyed the dismal tidings when he found,—
Yet he was kind, or, if severe in aught,
The love he bore to learning was in fault;
The village all declared how much he knew,
'Twas certain he could write and cipher too;
Lands he could measure, terms and tide presage,
And e'en the story ran that he could gauge;
In arguing too the parson owned his skill,
For e'en though vanquished he could argue still,
While words of learned length and thundering sound,
Amazed the gazing rustics ranged around,
And still they gazed, and still the wonder grew,
That one small head could carry all he knew.

—Goldsmith.

Pronunciation of Botanical Names.—The discussion as to pronouncing names derived from Latin—botanical or otherwise,—is one that cannot be settled by any rule, for it is custom which gives the law to any language. The English once determined that sex would decide the genders, while the ancient Latins had no such general rule,—yet no one in these days objects to an admirer of a yacht exclaiming "how beautifully *she* sails!" We do not know how the Latins pronounced their words, except as we gather from the rhythmic measures of their poetry. It is a dead language. There is no more reason why the modern Englishman should adopt the Italian pronunciation of Latin to-day than that an Italian should adopt the English. Each country will keep to its own pronunciation. Paris will still be pronounced by an Englishman according to English custom, though the Frenchman may not understand him. The following from a correspondent has some interest in connection with this question:

"The article in your valuable journal, of November issue, on "Pronunciation of Violet," is worth discussing a little more. The writer of this believes that the use of the old and dead Latin language is accepted all the world over for the nomenclature in scientific work,—especially in botany and zoology. We send plants from one end of the world to the other, and all the botanists and horticulturists will know the plant named in the Latin language—if these botanists are living in America or Africa. If we keep this in our mind, we cannot speak, neither from Italian Latin nor English Latin, but only from the Latin language in Latin letters, pronounced in Latin. Of course Latin is easier to use by the Italian, Roumanian, Spaniard and the Germans. Do these people have the same pronunciation of their letters as the English and French? For instance: *Eucharis*, *Eucalyptus* expressed in so-called English Latin,—a real Latin could hardly understand the meaning. The matter is quite different, if we take the common use of Latin names in our daily-handled flowers, as a *Viola*, *Dianthus*, *Ageratum*, etc. Nobody should find anything in it to suit these Latin names for our (?) English tongues. But I think, especially after I read this said article, that I will continue still to pronounce the botanical Latin names in the real expression of the Latin language."

This is from an intelligent German gardener, as the idiomatic expressions show.

Quince Culture.—The Orange Judd Co., of New York, has issued a new and revised edition of Meech's "Quince Culture," bringing the work up to the latest views of successful treatment. Separate chapters are devoted to the history of the quince, structure of the quince trees, varieties, soils, manures, location, cultivation, laying out of orchards, transplanting, propagation, pruning, promoting fruitfulness, flowers and fruits, thinning, gathering and marketing, profits of quince culture, diseases, winter killing, insects and other enemies, fungi injurious to the quince, recent varieties and chemical analysis.

GENERAL NOTES.

DECEMBER WEATHER. — The weather, in many parts of the East, was phenomenally mild up to the first week in December. In the vicinity of Philadelphia, tree-planting and general gardening operations were carried on up to that date. The Whitlow Grass, *Draba verna*, was in full bloom on the 1st of December, and ground white with its blossoms as usually seen in April or May. A correspondent, Mr. H. P. Beaver, writing from Greenville, Pennsylvania, notes that even the pretty Bluets, *Houstonia cærulea*, had been imposed upon,—and were in the belief that spring had come. He says: "While I was out hunting to-day, I walked through a large meadow, and was surprised to find it profusely specked with fair Bluets, *Houstonia cærulea*. I never saw this pretty flower in bloom so late before."

MOSS ROSES.—Welcome as we do the many advances made by florists in connection with new flowers and new varieties of flowers, one has often to regret the neglect into which the old favorites fall. The disappearance of the beautiful moss rose is especially a case in point. Few flowers have suggested more beautiful sentiments; few flowers have been more universally beloved; but simply because they were not ever-bloomers the moss rose has fallen into disuse.

Everblooming roses are of course very well in their way; but one is tempted to say there may be too much of a good thing, when we have to pay the price of the extinction of the moss rose for them. If some one would only undertake and succeed in raising a good everblooming moss rose, surely his fortune would be made.

LIFE IN THE EARTH.—It has been stated that the atmosphere is full of small germs,—large numbers being drawn into our lungs with every breath we take. Even dew-drops, they say, are not free from bacterial organisms, in the earth they also abound; but a very great majority are aids to life rather than seriously injuring it. Unfortunately the old saying of Dr. Samuel Johnson, that, "a little learning is a dangerous thing," comes in with great force in connection with these minute organisms. Parties who know little or nothing but in whom the community have great faith, frighten the timid in all sorts of ways. This is especially the fact in connection with the water supplies of large cities. Typhoid fever is attributed to one of these organisms which is said to be scattered by drinking water. It is, however, beginning to be thoroughly understood that this species of bacterium is not an aquatic, but is one of the aerial forms. Later experiments show that the germ of typhoid fever could not live in water, and our drinking water will be still able to protect itself.

FLOWERS TURNING TO THE SUN.—It has been noted that a large number of species of plants have their flowers bending to the southeast when opening. The well-known Compass Plant, *Silphium laciniatum*, is one of this class.

Some thirty years ago, the writer of this paragraph presented a paper to the Academy of Natural Sciences, of Philadelphia, which was published in the Proceedings of the Society, showing that all the growth made in the flowers of the Compass Plant was made within two or three hours after sun rise. All growth after this was at a standstill until the next day. It has since been noted that the flowers which turn towards the southeast in opening, as already referred to, are those which choose this particular part of the day as their growing time. It is just possible that the heat and light after the rising of the sun has an influence on growth at that time, and this may be the reason for the turning in this particular direction. All plants have a specific time of growth, some in the morning, some at mid-day, and some at evening or night. Growth is not continuous in any plant, but is rhythmical. Presumably only those with the morning growth turn towards the sun.

SITUATIONS WANTED

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENERS:—We shall be glad to furnish names of competent gardeners adapted to large or small places. Gardeners wishing situations should correspond with us. THOMAS MEEHAN & SONS, Nurserymen, Germantown, Philadelphia.

GARDENER—Situation wanted as gardener and florist, by single, middle aged man. Thoroughly experienced in growing flowers, fruits and vegetables. For further information address L. Beiderman, Huntsville, Ala.

AS GARDENER, by a man of experience and ability, will be disengaged 1st of March next, thoroughly conversant with the management of a gentleman's country estate, unexceptional references for ability and personal character.
Address, J. E. S.
Box 103
Toms River, N. J.

HEAD GARDENER—*Estate Manager*—Situation wanted by a theoretical and practical gardener, 27 years experience in Landscape work, cultures under glass or out-doors, all branches of gardening. Best references from *first-class* places. Europe and U. S. February or later, "R. F.," Office, MEEHANS' MONTHLY.

HEAD GARDENER—Position wanted on private place by practical Scotchman, 30 years old, married, no children, thorough experience in every branch. Highest recommendations. Address, W. A., care of MEEHANS' MONTHLY.

GARDENER—Situation wanted on private place by Dane, single, 40 years old. Experienced in all branches. Highest references. Address G. R., care of MEEHANS' MONTHLY.

Southern Florist and Gardener.

THE ONLY FLORAL MAGAZINE FOR THE SOUTHERN CLIMATE.

ISSUED ON THE 1ST OF EACH MONTH.

$1.00 per Year, Ten cents additional to pay postage on one of our handsome floral premiums, which we give free of charge to each new subscriber.

Liberal Cash Commissions to Agents.
Advertising Rates on Application.

PUBLISHED BY

The Southern Florist and Gardener Pub. Co.

ELIZABETH FRY, Editor and M'g'r. 336 W. GREEN ST., LOUISVILLE, KY.

SAMPLE COPY FREE.

MEEHANS' MONTHLY Vol. VI

The complete issue for 1896 can now be furnished handsomely bound in cloth, gilt edge, to match preceding volumes. Price **$2.50**

Subscribers can return unbound parts for 1896, and receive a bound copy in return for 65 cents. Missing numbers supplied at 20 cents each.

Write your name and address on outside of parcel, but put no writing whatever inside. We can also supply volumes 1 and 2, (bound together) for $3.50; and $2.50 for each of the succeeding volumes. Total, $13.50 for the entire set.

THOMAS MEEHAN & SONS
PUBLISHERS
GERMANTOWN, PHILA.

The Rose: Its Cultivation, Varieties, etc.

BY H. B. ELLWANGER.

Directions for cultivation, for planting, pruning, propagation, the treatment of diseases and insect enemies, particularly valuable for its classification, alphabetical and descriptive list of nine hundred and fifty-six varieties. Cloth, 16vo. Price, $1.25.

THOMAS MEEHAN & SONS, Germantown, Pa.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of **Rare and Beautiful California Novelties. Many New Begonias, New Cosmos, Rare Cacti, etc.** Offered by no others.

Ventura-by-the-Sea, Cal.

The Amateur's Flower Garden. A Guide to the Formation and Management of the Flower Garden and the Cultivation of Garden Flowers. New and revised edition. By Shirley Hibbard. Illustrated with colored plates. Cloth, 12mo. . . . $2.50

The Orchid Grower's Manual. Sixth edition, enlarged and revised. By Benjamin Samuel Williams, F. L. S., F. R. H. S. This popular work contains descriptions of upward of 1470 species and varieties of Orchidaceous plants, together with 478 synonyms; profusely illustrated with a large number of page and double-page engravings on wood, together with blocks illustrative of types of the various genera. $7.00

THOMAS MEEHAN & SONS, Germantown, Phila.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

SPECIAL CLUBBING OFFERS

MEEHANS' MONTHLY, GARDEN AND FOREST,	one year, for	$5.00
	renewals,	$6.00
MEEHANS' MONTHLY, GARDENING,	one year, for	$3.50
MEEHANS' MONTHLY, AMERICAN GARDENING,	one year, for	$2.75
MEEHANS' MONTHLY, GARDEN AND FOREST, GARDENING,	one year, for	$6.50
	renewals,	$7.50
MEEHANS' MONTHLY, GARDEN AND FOREST, AMERICAN GARDENING,	one year, for	$5.75
	renewals,	$6.25
MEEHANS' MONTHLY, GARDEN AND FOREST, GARDENING, AMERICAN GARDENING,	one year, for	$7.25
	renewals,	$8.25

Address

THOMAS MEEHAN & SONS, Publishers,

GERMANTOWN, PHILA.

A BICYCLE FREE

To any person who will send in $150.00 of subscriptions at regular rates to Romance, Current Literature, or Short Stories, between the 1st day of October, 1896, and the 1st day of May, 1897, we will give, free of cost, one $100 BICYCLE of STANDARD make, lady's or gentleman's model. Full particulars on application by enclosing 10 cents for samples and instruction. - - - - - - - - - -

CURRENT LITERATURE is a magazine of information. At once the largest magazine published, it contains an endless amount of interesting material—the cream of the thought and intellectual development of the day. 25 cents a number—$3.00 a year.

SHORT STORIES is a magazine of short tales—the original and best of story magazines—handsomely illustrated by the ablest illustrators of the day. The new department of anecdotes offers a monthly prize for the best one sent in. 25 cents a number—$2.50 a year.

ROMANCE portrays the romantic side of modern life, its arts, its celebrities, its wonders, its peculiarities, its varied developments. Light yet serious. Cheap yet respectable. 10 cents a number—$2.00 a year.

For list of prizes see advertising pages each month.

THE CURRENT LITERATURE PUBLISHING CO.
52-54 Lafayette Place, New York

Successful

growers of **fruits, berries,** and all kinds of **vegetables,** know that the largest yields and best quality are produced by the liberal use of fertilizers containing at least **10% of**

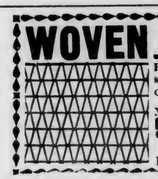
Actual Potash.

Without the liberal use of Potash on sandy soils, it is impossible to grow fruits, berries and vegetables of a quality that will command the best prices.

All about Potash—the results of its use by actual experiment on the best farms in the United States—is told in a little book which we publish and will gladly mail free to any farmer in America who will write for it.

GERMAN KALI WORKS,
93 Nassau St., New York.

WOVEN WIRE FENCE



Best on Earth. Horse-high, Bull-strong, Pig and Chicken-tight. With our DUPLEX AUTOMATIC Machine you can make 60 rods a day for **12 to 20 cts. a Rod.** Over 50 styles. Catalogue Free.
KITSELMAN BROS.,
Box 66. Ridgeville, Ind.

Seeds! Seeds!

73d Annual Priced Catalogue of

VEGETABLE, FARM AND FLOWER SEEDS

is now ready and mailed free to all applicants.

BRIDGEMAN'S SEED WAREHOUSE,
37 East 19th St., New York City.

Put up in.....

25-lb. Bags and 100-lb. Kegs

SOLD BY THE

SEEDSMEN

For pamphlet of interest, address,

Hammond's Slug Shot,
Fishkill-on-Hudson, N. Y.

LANDSCAPE AND SANITARY ENGINEERING

Sub-division and treatment of property for towns, parks and villa sites. Designs for grading, road building, and other improvements. Public and domestic water supply. Sewage disposal for houses and towns. Reports, estimates, specifications and superintendence.

TOPOGRAPHICAL ENGINEERING AND SURVEYING — **HAROLD VAN DUZEE** — **PHILADELPHIA, PA.** 427 WALNUT ST.

None-Better-Grown

No better **trees, small fruits, vines, roses, ornamental shrubs**—no larger stock—no greater variety—no finer quality—anywhere. We sell direct to the consumer and save him 50 per cent. Write for illustrated catalog and learn how we do it.

Fruit crates and baskets. REID'S NURSERIES, BRIDGEPORT, OHIO.

STAR STRAWBERRY **ELDORADO BLACKBERRY**

FLOWER POTS

THE WHILLDIN POTTERY CO.,
713, 715, 717, 719 Wharton Street, Philadelphia, Pa.

BRANCH WAREHOUSES:
Randolph Avenue and Union St., Jersey City.
Jackson Ave. and Pearson St., Long Island City.

BUY NO INCUBATOR

and pay for it before giving it a trial.

The firm who is afraid to let you try their incubator before buying it, has no faith in their machine. We will sell you ours **ON TRIAL. NOT A CENT until tried, and a child can run it with 5 minutes attention a day.** We won **FIRST PRIZE WORLD'S FAIR** and will win you for a steady customer if you will only buy ours on trial. **Our large catalogue will cost you 5 cents and give you $100 worth of practical information on poultry and incubators and the money there is in the business.** Plans for Brooders, Houses, etc., 25

N. B. Send us the names of three persons interested in poultry and 25 cents and we will send you "The Bicycle: Its Care and Repair," a book of 180 subjects and 80 illustrations, worth $5.00 to any bicycle rider.

VON CULIN INCUBATOR CO.,
Box 180. Delaware City, Del.

THE FAMILY MONEY MAKER!

Worth $100.00 a year and more to all who own land, a garden, orchard, or conservatory; covers, in plain language, by practical men, the care and cultivation of flowers, fruits, plants, trees, shrubs, bulbs, etc., etc., and tells how to make home grounds attractive.

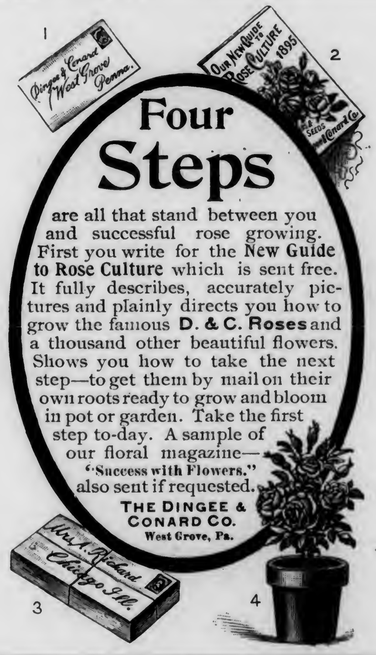
3 AMERICAN GARDENING 10

America's brightest and most reliable gardening and family paper. Established 50 years. Illus. Weekly. $1.00 a year.

WITH HANDSOME PREMIUM

To introduce it to new readers we will send AMERICAN GARDENING three months (12 numbers) to any address on receipt of Ten Cents, in stamps or coin. Sample free.

AMERICAN GARDENING, P. O. Box 1697, N.Y.



Four Steps

are all that stand between you and successful rose growing. First you write for the **New Guide to Rose Culture** which is sent free. It fully describes, accurately pictures and plainly directs you how to grow the famous **D. & C. Roses** and a thousand other beautiful flowers. Shows you how to take the next step—to get them by mail on their own roots ready to grow and bloom in pot or garden. Take the first step to-day. A sample of our floral magazine—"Success with Flowers," also sent if requested.

THE DINGEE & CONARD CO.
West Grove, Pa.

Roe's Play and Profit in My Garden. The author takes us to his garden on the hillside in the vicinity of West Point, and shows us how out of it, after four years' experience, he evoked a profit of $1,000, and this while carrying on pastoral and literary labor. It is very rare that so much literary taste and skill are mated to so much agricultural experience and good sense. Cloth, 12mo. $1.50

THOMAS MEEHAN & SONS,
Germantown, Phila.

FLOWER POTS—STANDARD

You will make a mistake if you place your order for Flower Pots without first receiving our estimate or the same. Our plant is now the largest in the WORLD.

STOCK UNLIMITED. GOODS UNEQUALED

A. H. HEWS & CO., North Cambridge, Mass.

Garden and Gardens . . .

A Horticultural Magazine largely devoted to outline plans and descriptions of some of the best gardens in America. Each number has for its leading article an account of some one of these gardens with detailed descriptions of the trees and plants in use and their adaptability for grouping for best effects, so that taken as a whole it covers all departments of horticulture. : : :

The first twelve numbers treat of Newport Villa grounds in which some of the best gardening in America undoubtedly appears as arranged by some of our most eminent landscape architects. The writer has seen most of these villas planted and has watched their progress from the beginning, noting successes and failures alike. These 12 numbers will constitute a valuable contribution to horticulture, in a bound volume, for which they are especially prepared. Numerous other articles appear in each issue. : : : : : : :

The work is printed on heavy paper and in large type, and illustrated with full page "half-tones" of the best class. : : : : : : : :

Subscriptions $2.00 for the first 12 numbers. Single Copies, twenty cents. Address, : :

LUCIUS D. DAVIS
Editor and Publisher

Newport, R. I.

Good Housekeeping Chief Corner Stone Of Good Homes - -

for the maintenance of Happiness, Peace and Contentment, where the Wife and Mother, the Husband and Father reign supreme, and rule by means of the law of love; where one is the Mother at Home in the best sense of the word, and the other sways the scepter of righteousness forming lives well worth the living.

"However happy a home may be, it will be made happier by the presence of Good Housekeeping."
—*Atlanta (Ga.) Southern Cultivator.*

With a view of making all Homes happy, the December, 1896, number of Good Housekeeping will give a carefully prepared paper on "The Model Wife," by Rev. Henry Tuckley, D. D., and for January, 1897, one on "The Model Husband."

The first of a novel series of papers on "Good Cooking," appeared in the November issue of Good Housekeeping, being the experience of the Woman who Cooked and Went to Market, and the Man who Ate and Paid the Bills—worthy the attention of every home dweller in Christendom.

Two papers will be given during the year 1897 on
First, "The Woes of a Nervous Man at Home," by a Woman of Nerve.
Second, "The Woes of a Nervous Woman at Home," by a Man without Nerve.

"The Woman with Bundles," will also have a hearing in due time.

As will a Scriptural Discussion of the, as yet, unsettled problem of "How Poor Was Job's Turkey?"

On all new subscriptions for 1897, copies of Good Housekeeping for November and December, 1896, will be sent free of charge.

CLARK W. BRYAN CO., Publishers
SPRINGFIELD, MASS.

JAPANESE MAPLES . . .

CHINESE MAGNOLIAS . .

NEW LORD PENZANCE'S HYBRID SWEET BRIAR ROSES

New Illustrated Descriptive Catalogue of Trees, Shrubs, Vines and Evergreens for fall planting is now ready. It will be mailed for four cents in stamps. It is the most complete catalogue of its kind ever issued. Contains prices of large and small trees, specimens for immediate effect, and special prices for quantities. It is a **practical Guide to Tree Planting.**

THOMAS MEEHAN & SONS

NURSERYMEN AND LANDSCAPE ENGINEERS

Station "G." Germantown, Philadelphia, Pa.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

LORD & BURNHAM CO.
HORTICULTURAL ARCHITECTS AND BUILDERS

LORD & BURNHAM CO.
ARCHITECTURAL OFFICE, 1133 FIFTH AVE. COR. 63D STREET, NEW YORK.
Factory: Irvington-on-Hudson, New York.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH
BY
THE GARDENING COMPANY
MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $1.00 A YEAR—IN ADVANCE

The most practical and valuable American Horticultural publication. Departments: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"The enclosed coupons would be gladly spared, for reliable, unprejudiced and well-informed Gardening is so scarce to be appreciated, and although many are glad to receive it upon personal request." W. G. Sloan, Richland Park, Ill.

"Gardening is the most instructional paper printed in America." Chas. L. Boyd, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive, its illustrations photographic views of plants, flowers and landscapes is a most admirable feature."
W. H. Johnson, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." Fannie Hollingsworth, Davenport, Ia.

"I have found Gardening extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." Chas. E. Brown, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a source of benefit to many professionals as well as to amateurs."
John Keary, Gardener to Senator Wolcott, Littleton, Colo.

"I refer Gardening highly on account of the very practical character of its contents."
J. A. Pettigrew, Supt. Lincoln Park, Chicago

"I regard Gardening as one of the most practical magazines issued in the interests of horticulture."
W. W. Meader, Waterville, N. Y.

"The paper is the most practical of any I read."
W. H. Akin, Food of Life, Wis.

"I subscribe to all the horticultural and horticultural journals on this continent so far as I know and find in Gardening the most practical one for an amateur like myself."
Dr. Geo. T. Hayward, Cowden, Ill.

PRACTICAL. POPULAR. ILLUSTRATED & EXPERT.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE-ART AND FORESTRY

Indispensable to all who love gardens or the literature of gardens; to all who own country places or take pleasure in rural scenery; to all who desire a broader knowledge of trees, shrubs, vines and flowers. GARDEN AND FOREST stands for the protection of our forests, the preservation of natural beauty, for a purer taste in the design and decoration of public and private grounds, and is universally pronounced the best horticultural journal ever published for Americans.

"Wise, intelligent, entertaining."—*Chicago Record.*
"The nurse of popular enthusiasm."—*N. Y. Sun.*
"Winning, delightful and accurate."—*N. Y. Tribune.*
"A compendium of practical information."—*Cincinnati Times-Star.*

BEAUTIFULLY ILLUSTRATED. WEEKLY. $4.00 A YEAR.

Specimen copy free on application.

Garden and Forest Publishing Co., Tribune Building, NEW YORK.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

FLOWER POTS—STANDARD

You will make a mistake if you place your order for Flower Pots without first receiving our estimate or the same. Our plant is now the largest in the WORLD.

STOCK UNLIMITED. GOODS UNEQUALED

A. H. HEWS & CO., North Cambridge, Mass.

Garden and Gardens . . .

A Horticultural Magazine largely devoted to outline plans and descriptions of some of the best gardens in America. Each number has for its leading article an account of some one of these gardens with detailed descriptions of the trees and plants in use and their adaptability for grouping for best effects, so that taken as a whole it covers all departments of horticulture. : : :

The first twelve numbers treat of Newport Villa grounds in which some of the best gardening in America undoubtedly appears as arranged by some of our most eminent landscape architects. The writer has seen most of these villas planted and has watched their progress from the beginning, noting successes and failures alike. These 12 numbers will constitute a valuable contribution to horticulture, in a bound volume, for which they are especially prepared. Numerous other articles appear in each issue. : : : : : :

The work is printed on heavy paper and in large type, and illustrated with full page "half-tones" of the best class. : : : : : : :

Subscriptions $2.00 for the first 12 numbers. Single Copies, twenty cents. Address, : :

LUCIUS D. DAVIS
Editor and Publisher

Newport, R. I.

Good Housekeeping Chief Corner Stone Of Good Homes - -

for the maintenance of Happiness, Peace and Contentment, where the Wife and Mother, the Husband and Father reign supreme, and rule by means of the law of love; where one is the Mother at Home in the best sense of the word, and the other sways the scepter of righteousness forming lives well worth the living.

"However happy a home may be, it will be made happier by the presence of Good Housekeeping."
—*Atlanta (Ga.) Southern Cultivator.*

With a view of making all Homes happy, the December, 1896, number of Good Housekeeping will give a carefully prepared paper on "The Model Wife," by Rev. Henry Tuckley, D. D., and for January, 1897, one on "The Model Husband."

The first of a novel series of papers on "Good Cooking," appeared in the November issue of Good Housekeeping, being the experience of the Woman who Cooked and Went to Market, and the Man who Ate and Paid the Bills—worthy the attention of every home dweller in Christendom.

Two papers will be given during the year 1897 on

First, "The Woes of a Nervous Man at Home," by a Woman of Nerve.

Second, "The Woes of a Nervous Woman at Home," by a Man without Nerve.

"The Woman with Bundles," will also have a hearing in due time.

As will a Scriptural Discussion of the, as yet, unsettled problem of "How Poor Was Job's Turkey?"

On all new subscriptions for 1897, copies of Good Housekeeping for November and December, 1896, will be sent free of charge.

CLARK W. BRYAN CO., Publishers
SPRINGFIELD, MASS.

JAPANESE MAPLES . . .

CHINESE MAGNOLIAS . .

NEW LORD PENZANCE'S HYBRID SWEET BRIAR ROSES

New Illustrated Descriptive Catalogue of Trees, Shrubs, Vines and Evergreens for fall planting is now ready. It will be mailed for four cents in stamps. It is the most complete catalogue of its kind ever issued. Contains prices of large and small trees, specimens for immediate effect, and special prices for quantities. It is a **practical Guide to Tree Planting.**

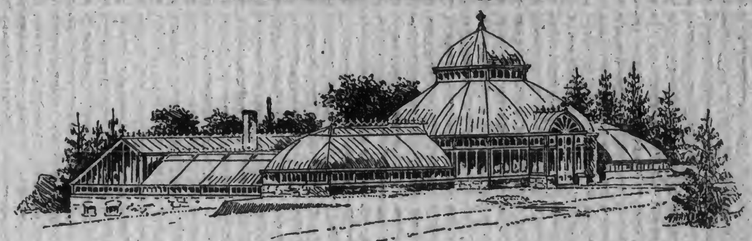
THOMAS MEEHAN & SONS
NURSERYMEN AND LANDSCAPE ENGINEERS

Station "G." Germantown, Philadelphia, Pa.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

LORD & BURNHAM CO.
HORTICULTURAL ARCHITECTS AND BUILDERS

STEAM AND HOT WATER HEATING ENGINEERS
Plans and Estimates furnished on application



Largest Builders of Greenhouse Structures. Six Highest Awards at the World's Fair
Send four cents postage for illustrated catalogue

LORD & BURNHAM CO.
ARCHITECTURAL OFFICE, 160 FIFTH AVE., COR. 21st STREET, NEW YORK.
Factory: Irvington-on-Hudson, New York Mention Paper

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH
BY
THE GARDENING COMPANY
MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature."
W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN,
Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs."
JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents."
J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture."
W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read."
W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself."
DR. GEO. T. HAWLEY, Corning, N. Y.

PRACTICAL. POPULAR. SCIENTIFICALLY EXACT.

VOL. IX. NO. 410
GARDEN AND FOREST
A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY
JANUARY 1, 1896.

Indispensable to all who love gardens or the literature of gardens; to all who own country places or take pleasure in rural scenery; to all who desire a broader knowledge of trees, shrubs, fruits and flowers. GARDEN AND FOREST stands for the protection of our forests, the preservation of natural beauty, for a purer taste in the design and decoration of public and private grounds, and is universally pronounced the best horticultural journal ever published for Americans.

"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Winning, delightful and accurate."—*N. Y. Tribune.*
"A compendium of new information."—*N. Y. Herald.*

BEAUTIFULLY ILLUSTRATED. WEEKLY. $4.00 A YEAR.

Specimen copy free on application.

Garden and Forest Publishing Co. Tribune Building, NEW YORK

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

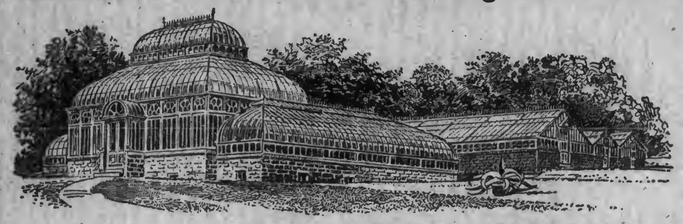
INTENTIONAL SECOND EXPOSURE

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

Trees, Shrubs, Evergreens, Vines and Hardy Plants = =

Our stock is one of the finest in the United States. Strong, thrifty, well-rooted and carefully selected to please our customers. **New Catalogue for Fall, 1896.** Everything accurately described and it is also profusely illustrated. Large buyers will be particularly interested in this catalogue. It will be mailed free upon application.

Landscape Engineering.

Plans prepared and carefully carried out for grading, roadmaking, planting and remodeling old places. Special arrangements made when extensive work is contemplated. Correspondence solicited.

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers — GERMANTOWN, PHILADELPHIA.

EDWARD CAMPBELL

LANDSCAPE ARCHITECT AND ENGINEER

ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. **Fine Crushed Stone for Walks and Carriage Drives.**

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS, The finest general assortment of Hardy Ornamental Plants in America. Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.

THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

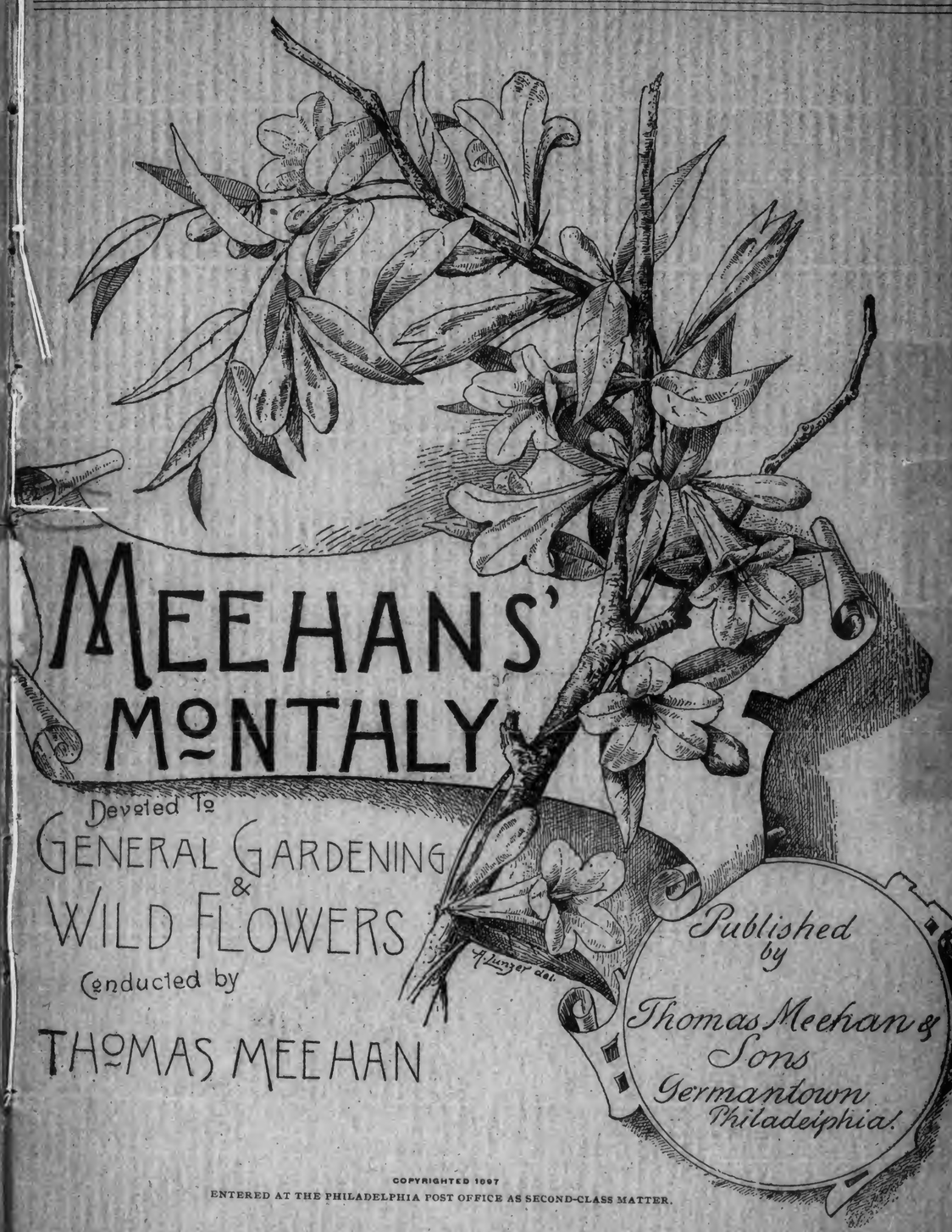
We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without putty. Latest methods of Ventilation, Steam and Hot-Water Heating. Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. ☞ Don't fail to get our Plans and Prices.

PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

WHEN WRITING TO ADVERTISERS, PLEASE MENTION MEEHANS' MONTHLY.

VOL. VII — FEBRUARY, 1897 — No. 2

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



MEEHANS' MONTHLY

Devoted To

GENERAL GARDENING & WILD FLOWERS

Conducted by

THOMAS MEEHAN

Published by Thomas Meehan & Sons Germantown Philadelphia.

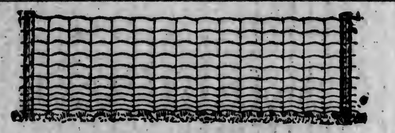
COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

TRY DREER'S GARDEN SEEDS

Plants, Bulbs and Requisites.
They are the best at the lowest prices. Calendar for '96 mailed free. Address

HENRY A. DREER,
714 CHESTNUT ST., PHILA.



PALACE CAR OR HAND CAR.

If you were going on a journey and the P. W. W. F. Co., offered you a reasonable rate over their **"Coiled Spring Route,"** splendid service, safety guaranteed—would you take it? Or, to save expense, would you "pump" yourself over the road on a hand car? If you choose the latter, **be sure the hand car has the right of way.**

PAGE WOVEN WIRE FENCE CO., Adrian Mich.

NOVELTIES IN PLANTS, FRUITS, ETC.
A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

BUY NORTHERN GROWN SEEDS

FARM SEEDS

Salzer's Seeds grow and produce! John Breider, Mishicott, Wis., astonished the world growing 173 bu. of Salzer's Silver King Barley per acre. Don't you believe it? Just write him. In order to gain, in 1897, 100,000 new customers, we send on trial

10 DOLLARS' WORTH FOR 10c.

12 pkgs. of new and rare farm seeds, including above Barley, Teosinte, Giant Spurry, Sand Vetch, "40c. Wheat," etc., positively worth $10, to get a start, including our great seed catalog, all postpaid, for 10 cents. Catalog alone, 5c. postage.

Largest growers of farm seeds and potatoes ($1.50 a bbl) in the world.

35 pkgs. earliest vegetable seeds, $1.00

JOHN A. SALZER SEED CO. LACROSSE WIS.

THOMAS MEEHAN & SONS

NURSERYMEN AND LANDSCAPE ENGINEERS,

Church and Chew Sts., Three Squares from Pelham — TELEPHONE 9411-A. — Germantown, PHILADELPHIA,

ORNAMENTAL TREES, SHRUBS AND FRUITS
of every description. Catalogue Free.

GRADING, ROADMAKING AND DRAINING
PLANS PREPARED
for Grading or Planting and carefully carried out.

HIGH CLASS SEEDS.

Our Ninety-Sixth Annual Catalogue is now ready, and will be mailed FREE on application. It contains the largest collection in the world of

Vegetable, Flower and Farm Seeds,

including every standard variety and every novelty of established merit.

For Nearly a Century the Leading Seed House of America.

J. M. THORBURN & Co. 15 JOHN ST. NEW YORK

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

ASPLENIUM FILIX-FŒMINA.

ASPLENIUM FILIX-FŒMINA.

LADY FERN.

NATURAL ORDER, FILICES.

A. FILIX-FŒMINA, Bernhardi.—Frond bipinnate; leaflets lanceolate, acuminate; segments oblong-lanceolate, deeply cut-pinnatifid; ultimate segments ¾-toothed; sori reniform or lunate, arranged near the veins; stipe smooth. A delicate, finely-divided fern in moist woods. Fronds ½ foot high, with sub-opposite divisions. These are sub-divided into distinct, obtuse segments, which are themselves cut into oblong, deep serratures, and, lastly, the serratures are mostly with ¾-teeth at the summit. Sori large, at first in linear curves, finally confluent, giving the whole frond a dark brown hue. (Wood's *Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern States*.)

Some inquiry has been made as to why this particular species should have received the common name of Lady Fern. It is a question no one has been able to answer satisfactorily. In early historic times ferns as well as other plants were classed according to various circumstances wholly aside from what we should now consider close relationship. Those that loved swamps constituted one class of ferns, for instance,—while others might be grouped for no better reason. In these various classes were species regarded as male ferns, and others as female ferns. The *Filix-mas* of Dioscorides, the early Greek herbalist, was a species with a stout, creeping root-stock,—while the *Aspidium Filix-mas* of the present day is an upright-stemmed fern,—the nearest representative of the tree fern they have in the North of Europe. The *Filix-fœmina* of Dioscorides was undoubtedly the Brake Fern of Northern Europe and of our own country, *Pteris aquilina*. All one can say is that in the reorganization of botany under Linnæus, he retained as far as possible for the specific names, under his binomial method, parts of the long string of names he found applied to the species. Of the many *Filix-fœmina* and *Filix-mas* then in existence, he selected the two to continue these names which now bear them, with possibly no particular reason why they should bear them except that he found them there. Some have supposed that one was the "Gentleman" fern and the other the "Lady" fern from the fact that while *Aspidium Filix-mas* bears "seed" only on the lower pinnules, and many fronds with no "seed" or sori at all on many of the fronds, while *Asplenium Filix-fœmina* is usually very prolific, the divison into sexes had relation to this fecundity. But it is evident from the language of the old writers, that they had no such thoughts. Indeed the ancients had no idea that the sori were of the nature of seeds. It was only in comparatively modern times that it was noticed that young plants came from them. Gerarde, writing in 1636, remarks, "neere the old plants I have observed very many small young plants growing, which came by the falling of the seed from those dusty scales; for I believe all herbes have seeds in themselves to produce their kinds, *Genesis* I, 11th and 12th."

If there were any foundation for the idea of making separate sexes of the "Male" and "Female" ferns, that fact would illustrate a point, established chiefly through the writer of this chapter, that a high vital power characterizes the female principle in nature, as compared with the male. In other words the female principle will successfully overcome destructive powers to which the male would speedily succumb. In the case of these ferns, *Aspidium Filix-mas* and *Asplenium Filix-fœmina*, the former has not been able to make its way to quite so wide a circle as the subject of the present sketch, which has made its way over every climatic obstacle and against numberless "conditions of environment" through many parts of the world. One of our earliest writers on ferns, Schweinitz, who flourished in the beginning of the century, briefly notes that it is found anywhere from "Bethlehem [where he resided] to the Northwest Territory." But even the Pacific Ocean has not obstructed its travels for it is as common in Japan as it is here. It has encircled the Northern Hemisphere, and extends from the Arctic Circle all down the North American Continent, wherever a moist wood is to be found. Along the Rocky Mountain range it is one of the com-

COLOR PLATE

ASPLENIUM FILIX-FŒMINA.

LADY FERN.

NATURAL ORDER, FILICES.

A. FILIX-FŒMINA, Bernhardi.—Frond bipinnate; leaflets lanceolate, acuminate; segments oblong-lanceolate, deeply cut-pinnatifid; ultimate segments 2½-toothed; sori reniform or lunate, arranged near the veins; stipe smooth. A delicate, finely-divided fern in moist woods. Fronds ½ foot high, with sub-opposite divisions. These are sub-divided into distinct, obtuse segments, which are themselves cut into oblong, deep serratures, and, lastly, the serratures are mostly with 2½-teeth at the summit. Sori large, at first in linear curves, finally confluent, giving the whole frond a dark brown hue. (Wood's *Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern States*.)

Some inquiry has been made as to why this particular species should have received the common name of Lady Fern. It is a question no one has been able to answer satisfactorily. In early historic times ferns as well as other plants were classed according to various circumstances wholly aside from what we should now consider close relationship. Those that loved swamps constituted one class of ferns, for instance,—while others might be grouped for no better reason. In these various classes were species regarded as male ferns, and others as female ferns. The *Filix-mas* of Dioscorides, the early Greek herbalist, was a species with a stout, creeping root-stock,—while the *Aspidium Filix-mas* of the present day is an upright-stemmed fern,—the nearest representative of the tree fern they have in the North of Europe. The *Filix-fœmina* of Dioscorides was undoubtedly the Brake Fern of Northern Europe and of our own country, *Pteris aquilina*. All one can say is that in the reorganization of botany under Linnæus, he retained as far as possible for the specific names, under his binomial method, parts of the long string of names he found applied to the species. Of the many *Filix-fœmina* and *Filix-mas* then in existence, he selected the two to continue these names which now bear them, with possibly no particular reason why they should bear them except that he found them there. Some have supposed that one was the "Gentleman" fern and the other the "Lady" fern from the fact that while *Aspidium Filix-mas* bears "seed" only on the lower pinnules, and many fronds with no "seed" or sori at all on many of the fronds, while *Asplenium Filix-fœmina* is usually very prolific, the divison into sexes had relation to this fecundity. But it is evident from the language of the old writers, that they had no such thoughts. Indeed the ancients had no idea that the sori were of the nature of seeds. It was only in comparatively modern times that it was noticed that young plants came from them. Gerarde, writing in 1636, remarks, "neere the old plants I have observed very many small young plants growing, which came by the falling of the seed from those dusty scales; for I believe all herbes have seeds in themselves to produce their kinds, *Genesis* I, 11th and 12th."

If there were any foundation for the idea of making separate sexes of the "Male" and "Female" ferns, that fact would illustrate a point, established chiefly through the writer of this chapter, that a high vital power characterizes the female principle in nature, as compared with the male. In other words the female principle will successfully overcome destructive powers to which the male would speedily succumb. In the case of these ferns, *Aspidium Filix-mas* and *Asplenium Filix-fœmina*, the former has not been able to make its way to quite so wide a circle as the subject of the present sketch, which has made its way over every climatic obstacle and against numberless "conditions of environment" through many parts of the world. One of our earliest writers on ferns, Schweinitz, who flourished in the beginning of the century, briefly notes that it is found anywhere from "Bethlehem [where he resided] to the Northwest Territory." But even the Pacific Ocean has not obstructed its travels for it is as common in Japan as it is here. It has encircled the Northern Hemisphere, and extends from the Arctic Circle all down the North American Continent, wherever a moist wood is to be found. Along the Rocky Mountain range it is one of the com-

COLOR PLATE
INTENTIONAL SECOND EXPOSURE

monest of ferns, and Mrs. Austin has found it on so high an elevation as Sassen's Peak in California. Though it cannot in any sense be said to be a "female fern," it is remarkably prolific of spores. Even comparatively young fronds are often covered with sorigia, and we may perhaps correctly say that it is the great strength of the female principle, which this productiveness exemplifies, that has given it the power to spread itself in spite of natural obstacles over so large a portion of the earth.

Ferns are very difficult to classify. The best system is that which brings together those forms which are alike, as if they were arranged on a genealogical tree. When systems bring together species that are evidently distantly related, they are faulty. Distinguished authors have tried to formulate various systems, and our Lady Fern has been placed in a number of different genera. But most of these have been abandoned, and modern writers on ferns have mostly gone back to the old name of Bernhardi, who wrote in 1806, and the Lady Fern now generally goes by his name, *Asplenium Filix-fœmina*, which has been adopted for this chapter. It varies very much, and authors have endeavored to give some of the variations distinctive specific names,—but they have mostly been remanded to the list of synonyms. Some of these variations are however worth noting. For instance the fronds of the fern are usually arranged at the apex of a stout rhizome, in a sort of bird-nest fashion. It would by no means be classed as a creeping fern. But Swartz has described one as distinct which he names *Aspidium asplenoides*, but regarded now as not specifically distinct from our Lady Fern, with a creeping root stock, as well as some other differences of a slight character. But such slight differences abound. Robinson, is his interesting little book entitled "Ferns in their homes and ours," says of this species, "I have before me a catalogue of a dealer in ferns in which he offers fifty-one varieties of *Asplenium Filix-fœmina*." In the figures given by different authors, differences may be seen. In the plate accompanying this chapter, the rachis is given as stout and perfectly straight, which is a correct representation of a typical specimen growing along the Wissahickon near Philadelphia. But in Mr. Williamson's "Fern etchings," presumably the ferns of Kentucky, it appears as very slender and flexuose. In the latter the primary pinnæ are comparatively long, slender, and taper acuminately,—while the Wissahickon plant, the pinnæ taper more abruptly, and are shorter in proportion to the length of the frond. The fructification is however always characteristic throughout the whole range of variation. The spore-case is attached to the midvein, and opens by a narrow slit, which as the sporangia mature, seems to become contracted so as to give the sorigia the form of horse-shoes.

It is singular that a plant which was known to the ancients, and has made its way so widely through the world, and also be known distinctively as the "Lady Fern," should seem to have found no place in poetry or polite history more than is accorded to ferns collectively. It is however associated with *Aspidium Filix-mas*, as having afforded, by its roots, food to starving people in famines of the past; and is said to be a common ingredient in bread made in Sweden. It also shares with the male fern the reputation of being one of the best anthelmintics known. The young shoots, taken very young, are said to be as good as Asparagus, but has drastic properties, which are against its general use. In America it has been the only fern furnishing food to the Indians, who, according to Rafinesque, freely used the roots.

It will be seen by the plate that the frond has been broken off, and does not appear to be complete. It may be observed, as a good fern lesson, that there are two great divisions of ferns as to the manner of their attachment to the rhizome or stem. In the one case they separate just as an ordinary leaf would do from a branch. In other cases they simply rot away, the lower portion of the stipe remaining long after the frondose portions have decayed. The Lady Fern belongs to the latter section.

"Stipe" and "frond" in ferns correspond to petiole and leaf-blade in flowering plants; but we have at times to use the word frond collectively. It is probable that, to avoid confusion, it will come to be the rule to use the term leaf, as in other plants.

EXPLANATION OF THE PLATE.—1. A full length frond from the Wissahickon. 2. An enlarged pinnule, showing the arrangement of the sporangia in its earlier stages.

WILD FLOWERS AND NATURE.

THE BEECH TREE.

Dark-leaved magnolias in their glossy pride,
And feathery palms have not a charm for me,
Like yon lone beech tree by the fountain side;
The name recording tree.

—SOLOMON CONRAD.

SMILAX ROTUNDIFOLIA.—To every frequenter of the woods, the Catbrier (*Smilax rotundifolia*) is doubtless well known as a perfect nuisance. As we have worked our way through the undergrowth of swamp or woodland in quest of some shy fern or orchid, we have all doubtless been brought to a standstill at times by the long stems of this brier athwart our path, scratching our hands and faces, tearing our clothing, and finally, if we persist in pushing against it, binding us hand and foot in our tracks, or upsetting us, vasculum, portfolio, lunch-box, Gray's Manual and all, on the ground or into the bog. Whether or not it has been due to the indomitable pertinacity of this plant that any attention has been finally drawn to some study of it, I do not know; but I have been a good deal interested in it of late, and thought I should like to speak a good word for it. It is really one of the most beautiful of our native plants, and, if people only would not attempt to fight it, it is capable of giving them a great deal of pleasure. Whether in the spring, when the soft young tendrils and shoots are feeling about in the air for something suitable to climb on, and the little bunches of tiny lily-like flowers invite the bees; or in the summer when the fair, round leaves are of the richest, shiniest green imaginable; or in the fall when its foliage displays almost every hue that our autumn landscape knows, the plant is always attractive.

At the foot of each leaf-stalk (in the mature plant) is a wing-like stipule, from the summit of which two tendrils spring—one on each side of the petiole. It is by these tendrils the plant climbs over bushes and up trees, sometimes to the height of twenty or thirty feet. It is interesting to observe that when the leaf drops, it does not part from the plant at the point where it joins the parent stem, as the leaves of most plants do. If it did, the clinging tendrils would keep the leaf from falling to the ground, and the great numbers of dead leaves thus suspended in mid-air would make a more unsightly appearance than Nature, who is a tidy housekeeper, would probably approve of. But the leaf breaks off about the middle of the petiole *above* the tendril, and so falls cleanly to the earth. Another interesting feature is the fruit. Not only are the small umbels of black berries which are clustered along the green stems beautiful in themselves, but their structure is very peculiar. Perhaps no better description can be given than in the words of Thomas Morong, in a paper published in *The Torrey Bulletin* a couple of years ago. "The baccate fruit of *Smilax*," he says, "is entirely unique, unlike anything found elsewhere, so far as I am aware. * * * Taking that of *S. rotundifolia*, a common northern species, by way of illustration, we find externally a thin, shining coat, separable from the inner parts. Beneath this lies a reddish pulp, through which three strengthening bands or ribs run from the base to the apex, uniting with each other like hoops. * * * They serve to impart firmness to the softer parts of the berry and to support the exterior coat. Just below the pulp, but separate from it, lie from one to several hyaline (i. e. *translucent*) elastic sacs, one enclosing each seed, appearing like so many cells. These sacs are rubber-like, and so elastic that they may be stretched many times their length without breaking." He adds that this curious property is so noticeable in another species (*S. Bona-nox*) as to lead to the popular name of "Stretchberry," by which that species is known in Texas.

About Philadelphia, a low form of the Catbrier, a couple of feet high and rather erect of habit, frequents old fields, though all the books I have seen, except Darlington's *Flora Cestrica*, limit its habitat to woods and thickets.

Philadelphia. C. F. SAUNDERS.

INCREASING LOVE FOR BOTANY.—A Waterbury (Connecticut) correspondent notes a much more widely extended love for wild flowers and nature in that city than formerly. This is the talk everywhere. In Philadelphia this is especially so, and comes mainly from Dr. Brooks, the superintendent of public schools, who encourages nature studies in the schools under his charge. It was at one time thought that botany could not be taught in the public schools without professional botanical teachers. But it is now perceived that "science" is not the mastering of a whole dictionary of technical terms,—but the habit of closely observing and comparing, which any wide-awake teacher is capable of fostering. In a Philadelphia public school recently the writer found that the teacher had gathered together a few score each of some half dozen kinds of acorns with their cups, and mixed them all together. Little tots of six or seven years were set to work at sorting them out, each kind into its own little pile. This lesson in comparison was the first lesson in botany,—and the principal of this school was really a "professor" of botany, though she may not have known she was handling *Quercus alba*, or *Quercus rubra*. Dr. Brooks deserves the thanks of all lovers of nature for the encouragement he gives his teachers to furnish such excellent botanical lessons to the school children; and those principals who work so well in these lines deserve special recognition.

THE SPANISH MOSS.—The curious Spanish Moss that attaches itself to the forest trees of the South, much as the grey lichen called *Usnea* does in northern forests, is a close relation of the Pine Apple. It is of the order *Bromeliaceæ*, of which the Pine Apple is a representative. On account of its grey, lichen-like character, it has received the botanical name of *Tillandsia usneoides*. Of late years it has had a good economic value. A correspondent of a daily paper has this to say of its condition at present:—

"The Southern Moss is rapidly disappearing. A few years ago all of the trees in the South had hanging to their branches great wisps of gray moss. It grew independently of the tree to which it was attached and without harming it. It was not used for anything and was not supposed to possess any value. Within the last ten years it has been used extensively for packing and by upholstering establishments. The demand has lately so increased that thousands of poor people in Louisiana, Mississippi and Alabama make their livings picking it off the trees, and it forms a very important branch of business in New Orleans. It is most plentiful along the bayous, and in the swamps, and the moss pickers with their flat-bottomed boats are among the most picturesque sights of the South now."

INFLUENCE OF FOOD IN THE DISTRIBUTION OF LIVING CREATURES.—It has been noted that, wherever food is abundant, living creatures which feed on such food abound. This is especially true of fish in the vicinity of towns which spring up along the sea coast. Numerous fish are now found to be quite abundant which were scarce before the towns were built, the town refuse making good food for the fish. In like manner, birds and various fish abound in the arctics, through the food which is brought down by icebergs and glaciers from the mountain sides,—the larvæ of innumerable insects being especially the principal food. In low flat lands this form of insect life does not readily find its way to the ocean. The dry earth has been brought into cultivation and plants follow man in the same way; wherever he goes various plants and animals are sure to travel with him.

AN IMMENSE DOUGLAS SPRUCE.—In the town of Whatcom, the most northwestern point of the United States, is a section of a Douglas Spruce, set on edge for the instruction of visitors, which is from the largest specimen probably of this species known. The tree was cut at Loop's Ranch Forks, Whatcom County, Washington. The tree was 465 feet high, 220 feet to the first limb, and 33 feet 11 inches in circumference at the base. If sawed into lumber it would make 96,345 feet. It would build eight cottages two stories high, of seven rooms each. The tree is about 480 years old, according to the rings. If sawed into inch-square strips it would fill ten ordinary cars, and the strips would reach from Whatcom to China.

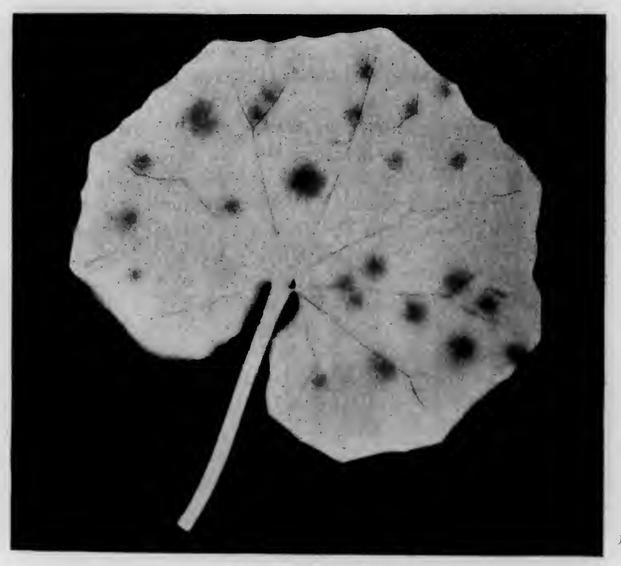
The section shows the tree sound to the core. Tall Douglas' Spruces make grand ship masts.

FLORAL PICTURES.—I was much interested in P. Bisset's directions for herbarium pictures which appeared in a recent number; and not having "blue paper" at hand, experiments were made with "Solio" in the same way. After securing good impressions of ferns, grasses, etc., I tried a leaf of *Farfugium grande*, the thinner texture of the light blotches and absence of chlorophyll permitting the light to permeate and produce dark spots upon the print; the veining is also shown to a considerable extent. The markings in some of the zonale geraniums proved equally pleasing.

Experiments with pressed flowers were in some instances highly satisfactory. Those small, or of the most delicate texture, proving best adapted to this style of art. The dainty flowers of *Smilacina bifolia* appear to good advantage on the dark background, while the thin leaf shows the system of venation. Wild Carrot, Dutchman's Breeches, carnation, Virgin's bower (flower and fruit), gave good returns. One of the most pleasing effects was secured from the sweet pea; owing to their more frail texture, and possibly in a measure to their difference in color, the standards did not wholly cut off the light,—consequently appear shaded as though taken with a camera. I doubt not a little practice and experimenting with delicate flowers will prove the plan capable of considerable further elaboration.

BESSIE L. PUTNAM.

Harmonsburg, Pa.



FARFUGIUM GRANDE.

The cut is furnished with pleasure, not only because it illustrates Miss Putnam's article on floral pictures, but also because it introduces to the reader an old but very valuable window plant, *Farfugium grande*, or, more properly, *Senecio Kaempferi*, introduced from China nearly a half century ago. It rarely flowers; but its spotted, healthy-looking leaves always attract attention.

BOTANIZING ON THE LAWN.—Under date of December 25th, Mr. J. B. Olcott, of South Manchester, Conn., writes:—

"In your last number was a very curious and nice study, by a gardener and botanist, of a 'lawn.' I wish you would, if you can, send me one or more clippings of that piece, and hope your correspondent can be induced to go on studying that very same sod. Do let him report what he sees there every month—for five years. Did he name any grasses in it? I suppose there were some, as it was cut and carted, bought and sold as 'turf.' I have seen thousands of as wretched instances of American lawn-work, but never saw any so circumstantially and innocently reported in print. Don't let my friend see this letter. It will frighten him. Let him work in his own way. I wish you would ask Prof. Scribner to send you a copy of his 'Grass' before the Massachusetts Horticultural Society, and that Dr. Meehan will read it."

TWIN OAKS.—On the farm of William Taylor, five miles from Dallas, Texas, a branch of an oak has crossed to another at a right angle, and, becoming engrafted with its neighbor, presents an exact appearance of the letter H.

CLEISTOGENE VIOLETS.—A Philadelphia correspondent says:—

"I have noticed for many years that one of the varieties of our common wild violet sends its seed pods from its root, entirely independent of its flower stems, and also that plants that have not bloomed at all perfect and ripen numerous capsules of seeds.

"If this be the case, and I am sure I am not mistaken, how are the seeds fertilized, or how is it possible for them to form at all? I send herewith a root of a small seedling that has not bloomed, and yet it shows the seed pods in various stages of growth.

"The stems that I cut off were all leaf stems."

This is the common blue violet, *Viola cucullata*, which of all the species of violet is better known in connection with this curious arrangement of bearing seeds without flowers.

There are rudiments of the flower in the bud,—that is there is a small quantity of pollen and the perfect pistil, and fertilization is affected in this secret or cleistogene manner. It is nature's method of securing close fertilization.

The pretty arrangements we know as truly flowers—violet flowers—produce seed only under exceptional conditions. Many plants, as well as most species of violet, have this singular method of producing seed.

THE GROWTH OF THE EARTH WORM.—Among the pleasures of gardening is the habit of watching the behavior of birds, insects and other creatures that are ever present with us,—even the common earth worm, a creature which is used to illustrate sluggards and dullards in the human species, may furnish us many interesting exhibitions and material for intellectual study. In the fall of the year, when grape vine leaves are dropping, we may find numbers of leaf stalks standing upright in the ground as if children had been planting them. This is the work of the earth worm,—but for what purpose, so far as books can tell us, is not known. It is a curious circumstance connected with this lower type of organic beings, that when cut in two the severed parts will regain new mouths, and each part will form an independent worm. This method of increase is supposed to be connected with plants only, and it is surprising to find it enjoyed by creatures so lowly organized as the earth worm. It was for a long time thought that the popular belief in this respect was erroneous; but a number of years ago a lady, interested in natural history studies, Miss Adele Fielde, made careful experiments during one whole year, in the Academy of Natural Sciences of Philadelphia, and demonstrated the truth of the popular belief, that separated sections of the earth-worm would become perfect individuals.

CHANGES OF CLIMATE.—When any unusual weather occurs, we are apt to believe that through the destruction of forests or some other occurrence, the climate itself is undergoing change. But, wherever we can get at the exact facts, we find that the experience of the present has been the experience of the past. In looking over the diary of William Bartram, preserved in the library of the Academy of Natural Sciences of Philadelphia, under date of January 10th, 1804, he notes "this is the first winter-like weather we have had this season. The fields and gardens, until yesterday, appearing green and flowery"—and on January 28th "Partridges call 'Ho-oi-hee,'" and March 7th "Frogs pipe." The following summer must have been on the other extreme. "July 8th, very sultry—thermometer 92°. September 3rd, thermometer 93°." All this reads like a modern register. And so with extremes. January 19th, 1805, he observes "severely cold, thermometer 12° above zero, while yesterday the glass was 50°." It seems now about as it ever was.

HEUCHERA SANGUINEA.—Few hardy herbaceous plants were received more graciously, by garden lovers, than the red *Heuchera sanguinea*, of New Mexico. Haage & Schmidt have introduced a white variety, of which they say:—

"One of the most charming perennials of recent introduction is decidedly the red-flowering *Heuchera sanguinea*, and we do not doubt a moment but that our new pure white flowering variety, which we are offering here, will be welcomed warmly by all lovers of hardy perennial plants. The graceful flowerscapes. 15 to 20 inches in height, produce their pure white flowers just as freely as those of the red flowering species, and furnish a splendid material for bouquets."

ANCIENT FOREST TREES.—The largest tree in the world, says the *Mineral Collector*, "lies broken and petrified at the end of a defile in Northwestern Nevada. Its dimensions are so great that those who know of its existence hesitate to tell the story because they hardly expect to be believed, but there is sufficient evidence to give the tale credit, improbable though it may seem.

This tree makes the monarchs of the Mariposa Grove seem like imposters, and compared to it, 'the tallest pine grown on Norwegian hills to be the mast of some great admiral' is but a wand. As for the story of its discovery, it is thus told by 'Dad' Lynn, of Fresno, and supported by other equally well-known people:

'Back in 1860 a company of about forty-five left Red Bluff to prospect the then unknown country beyond Honey Lake and Surprise Valley. There were in the party lawyers, butchers and shoemakers, but we were one-sided on one point—each individual felt positive that this was the turning point of his existence, and that bright, shining gold in unlimited quantities would reward the rather unpleasant jaunt.

THE GLEANERS.—SEE PAGE 29.

'The Indians—we call them Bannocks—were at that time raising hair, and very many sudden moves were at times necessary in order to get rid of their unwelcome attentions. Finding but little gold in this section, we travelled toward Baker County, Oregon, through a country entirely denuded of timber, except a few dwarf cottonwoods along the waterways. Close to the Baker County line we came to an opening in the rocks, about wide enough for our wagons to go through, and on either side loomed precipices 500 and 600 feet high. The crevasse was about 15 miles long, and at its end, just to the right of the trail, we found a number of petrified stumps of different heights and sizes.

'In their midst on the ground lay a monster tree, somewhat imbedded in the soil. It was completely petrified, and, from the clean-cut fractures of the trunk, seemed to have fallen after petrification. At its but, this tree was quite 60 feet in diameter. We measured its length with a tape line. It was just 666 feet long. No limbs remained, but in the trunk were clefts where apparently limbs had broken off. Amber-like beads of petrified pitch or gum adhered to the sides of the trunk for a distance of 100 feet or more.

'Where the huge trunk was broken squarely off the centre seemed transparent, and the growth marks showed in beautiful concentric rings. Its natural appearance was handsomer than any dressed marble or mosaic I have ever seen, and we all expressed the opinion that it would make a wonderfully beautiful floor and interior finish for some grand building.'"

This interesting account of a child of the ancient American forest is copied here in order to add a confirmatory note. A quarter of a century ago, the writer and some friends traveled by wagon through some of the unsettled parts of Colorado, and came to what had been a standing silicified forest. Civilization had, however, been there before us, and hacked and hauled away all the material above ground to sell to the curiosity monger; one of the rear guards being there at the time, with his ox team, loading up the crumbs that had been left from the gourmand's table. Still covered by debris from the denudations from higher levels, upright trunks were imbedded to a great depth—one hollow subject allowing a stone at the end of a piece of twine to drop

CLEISTOGENE VIOLETS.—A Philadelphia correspondent says:—

"I have noticed for many years that one of the varieties of our common wild violet sends its seed pods from its root, entirely independent of its flower stems, and also that plants that have not bloomed at all perfect and ripen numerous capsules of seeds.

"If this be the case, and I am sure I am not mistaken, how are the seeds fertilized, or how is it possible for them to form at all? I send herewith a root of a small seedling that has not bloomed, and yet it shows the seed pods in various stages of growth.

"The stems that I cut off were all leaf stems."

This is the common blue violet, *Viola cucullata*, which of all the species of violet is better known in connection with this curious arrangement of bearing seeds without flowers.

There are rudiments of the flower in the bud,—that is there is a small quantity of pollen and the perfect pistil, and fertilization is affected in this secret or cleistogene manner. It is nature's method of securing close fertilization.

The pretty arrangements we know as truly flowers—violet flowers—produce seed only under exceptional conditions. Many plants, as well as most species of violet, have this singular method of producing seed.

THE GROWTH OF THE EARTH WORM.—Among the pleasures of gardening is the habit of watching the behavior of birds, insects and other creatures that are ever present with us,—even the common earth worm, a creature which is used to illustrate sluggards and dullards in the human species, may furnish us many interesting exhibitions and material for intellectual study. In the fall of the year, when grape vine leaves are dropping, we may find numbers of leaf stalks standing upright in the ground as if children had been planting them. This is the work of the earth worm,—but for what purpose, so far as books can tell us, is not known. It is a curious circumstance connected with this lower type of organic beings, that when cut in two the severed parts will regain new mouths, and each part will form an independent worm. This method of increase is supposed to be connected with plants only, and it is surprising to find it enjoyed by creatures so lowly organized as the earth worm. It was for a long time thought that the popular belief in this respect was erroneous; but a number of years ago a lady, interested in natural history studies, Miss Adele Fielde, made careful experiments during one whole year, in the Academy of Natural Sciences of Philadelphia, and demonstrated the truth of the popular belief, that separated sections of the earth-worm would become perfect individuals.

CHANGES OF CLIMATE.—When any unusual weather occurs, we are apt to believe that through the destruction of forests or some other occurrence, the climate itself is undergoing change. But, wherever we can get at the exact facts, we find that the experience of the present has been the experience of the past. In looking over the diary of William Bartram, preserved in the library of the Academy of Natural Sciences of Philadelphia, under date of January 10th, 1804, he notes "this is the first winter-like weather we have had this season. The fields and gardens, until yesterday, appearing green and flowery"—and on January 28th "Partridges call 'Ho-oi-hee,'" and March 7th "Frogs pipe." The following summer must have been on the other extreme. "July 8th, very sultry—thermometer 92°. September 3rd, thermometer 93°." All this reads like a modern register. And so with extremes. January 19th, 1805, he observes "severely cold, thermometer 12° above zero, while yesterday the glass was 50°." It seems now about as it ever was.

HEUCHERA SANGUINEA.—Few hardy herbaceous plants were received more graciously, by garden lovers, than the red *Heuchera sanguinea*, of New Mexico. Haage & Schmidt have introduced a white variety, of which they say:—

"One of the most charming perennials of recent introduction is decidedly the red-flowering *Heuchera sanguinea*, and we do not doubt a moment but that our new pure white flowering variety, which we are offering here, will be welcomed warmly by all lovers of hardy perennial plants. The graceful flowerscapes. 15 to 20 inches in height, produce their pure white flowers just as freely as those of the red flowering species, and furnish a splendid material for bouquets."

ANCIENT FOREST TREES.—The largest tree in the world, says the *Mineral Collector*, "lies broken and petrified at the end of a defile in Northwestern Nevada. Its dimensions are so great that those who know of its existence hesitate to tell the story because they hardly expect to be believed, but there is sufficient evidence to give the tale credit, improbable though it may seem.

This tree makes the monarchs of the Mariposa Grove seem like imposters, and compared to it, 'the tallest pine grown on Norwegian hills to be the mast of some great admiral' is but a wand. As for the story of its discovery, it is thus told by 'Dad' Lynn, of Fresno, and supported by other equally well-known people:

'Back in 1860 a company of about forty-five left Red Bluff to prospect the then unknown country beyond Honey Lake and Surprise Valley. There were in the party lawyers, butchers and shoemakers, but we were one-sided on one point—each individual felt positive that this was the turning point of his existence, and that bright, shining gold in unlimited quantities would reward the rather unpleasant jaunt.

'The Indians—we call them Bannocks—were at that time raising hair, and very many sudden moves were at times necessary in order to get rid of their unwelcome attentions. Finding but little gold in this section, we travelled toward Baker County, Oregon, through a country entirely denuded of timber, except a few dwarf cottonwoods along the waterways. Close to the Baker County line we came to an opening in the rocks, about wide enough for our wagons to go through, and on either side loomed precipices 500 and 600 feet high. The crevasse was about 15 miles long, and at its end, just to the right of the trail, we found a number of petrified stumps of different heights and sizes.

'In their midst on the ground lay a monster tree, somewhat imbedded in the soil. It was completely petrified, and, from the clean-cut fractures of the trunk, seemed to have fallen after petrification. At its but, this tree was quite 60 feet in diameter. We measured its length with a tape line. It was just 666 feet long. No limbs remained, but in the trunk were clefts where apparently limbs had broken off. Amber-like beads of petrified pitch or gum adhered to the sides of the trunk for a distance of 100 feet or more.

'Where the huge trunk was broken squarely off the centre seemed transparent, and the growth marks showed in beautiful concentric rings. Its natural appearance was handsomer than any dressed marble or mosaic I have ever seen, and we all expressed the opinion that it would make a wonderfully beautiful floor and interior finish for some grand building.'"

This interesting account of a child of the ancient American forest is copied here in order to add a confirmatory note. A quarter of a century ago, the writer and some friends traveled by wagon through some of the unsettled parts of Colorado, and came to what had been a standing silicified forest. Civilization had, however, been there before us, and hacked and hauled away all the material above ground to sell to the curiosity monger; one of the rear guards being there at the time, with his ox team, loading up the crumbs that had been left from the gourmand's table. Still covered by debris from the denudations from higher levels, upright trunks were imbedded to a great depth—one hollow subject allowing a stone at the end of a piece of twine to drop

THE GLEANERS.—SEE PAGE 29.

INTENTIONAL SECOND EXPOSURE

over twenty feet. But there was one trunk, broken off near the surface, that was twelve feet in diameter, say thirty-six in circumference. This had had its edges chipped off by the vandals already alluded to, and its width at that point must have been greater, to say nothing of a point farther down. It was evidently a *Sequoia* of some kind. The smaller ones appeared to be oaks. Before the Rocky and Pacific Coast Mountains were thrown up, and the more tender trees destroyed by change of climate following the elevation, the size of the forest trees was evidently greater than now.

BOTANICAL PHOTOGRAPHS.—One who has never attempted to photograph plants and flowers can have no knowledge of the skill required to produce them in a recognizable form, and where one is successful in presenting a collection of 100 views beautifully printed and mounted, and so clear that the variety of the flower can be readily determined,—such a one deserves more than the usual "cut and dried" complimentary notice of the daily newspaper.

The wild flower photographs recently shown at the rooms of the Philadelphia Photographic Society, by Henry Troth, were specimens of artistic skill, the like of which, in this special department of the art, we have not seen before. Many of the productions were superb specimens of photography. Mr. Troth presented for inspection several of the difficult compositæ most creditably, and, while not as clearly cut as some of the more attractive subjects, they were worthy of equal praise.

Those who were fortunate enough to see his Water Lillies, Trailing Arbutus, Arrow Heads, Blackberry, Star Flower, Skunk Cabbage, Indian Pye,—and many other cards of equal merit, had before them life size subjects, perfect in delineation, and wanting only in the natural colors. It is to be hoped that another season this exhibition will be repeated, and given wider publicity. E. C. J.

Philadelphia, Pa.

WILD CELERY.—It seems unfortunate that common names of plants that have been in common use become transferred to some plant totally different from the one which originated the name. This is true of what is known to sportsmen as Wild Celery. This is a water plant on which aquatic game birds feed, and which it is said results in a very superior kind of flesh. Birds which are found in the localities where the Wild Celery grows are much preferred by students in gastronomy. Instead, however, of the plant belonging to the family with which our common celery is connected, it is of a totally different character. Its botanical name is *Vallisneria spiralis*. It is of interest to botanists as well as sportsmen, from the peculiar manner in which the flowers are fertilized. The two classes of flowers are produced on slender spiral stalks. When the flower buds reach the surface of the water they expand and the pollen from one class of flowers is cast upon the water and is carried by the water to the flowers bearing pistils, and they become fertilized in this way. After discharging the pollen, the male flowers wither and die, but the other class of flowers after receiving this pollen continue on the surface of the water for a few days, and then the spiral line of the flower stalk is drawn in and the seed vessel finally finds itself in the mud at the base of the plant, is broken off by the torrent and is carried to some other locality. It is the most interesting study in the behavior of plants that we find in the vegetable kingdom.

VARIETY IN NATURE.—Waiting ten minutes for a train last fall, my companion hazarded that twenty species of plants grew on the high bank facing the station platform. Even my small experience had taught me how lavishly Nature sows her seed, and I put the figure conservatively at fifty; immediately beginning to count, I soon reached the twenty point, but after the thirtieth, progress was slower. Every few seconds, however, new leaf-forms would meet my eye, and when we heard the train whistle in the distance I had counted forty-eight. This was all I could master from the distance of ten feet, so I stepped across the track and immediately saw two small herbs on this closer scrutiny. This made fifty; then I had to retreat to the getting-on side of the track. Thinking over the rich look of the area we counted from, I would now boldly place my estimate at seventy-five, though I shall probably never have a chance to list and verify my prophecy in that same place.

E. NEWLIN WILLIAMS.

GENERAL GARDENING.

THE BENEVOLENT GARDENER.

Give fools their gold and knaves their power;
Let fortune's bubbles rise and fall;
Who sows a field, or trains a flower,
Or plants a tree, is more than all.

For he who blesses most is blest;
And God and man shall own his worth,
Who toils to leave as his bequest,
An added beauty to the earth.

And, soon or late, to all that sow,
The time of harvest shall be given;
The flowers shall bloom, the fruit shall grow,
If not on earth, at last in heaven.

—WHITTIER.

GLEANING.—A beautiful picture that has recently been lithographed by L. Prang & Co., a miniature of which we have kindly been permitted to reproduce on page 27, reminds us of how many old customs have been abolished by the introduction of new machinery and other inventions. We are all familiar with the idea of gleaning, through the history of Ruth and Boaz; but there are probably few living to-day who have actually been among the gleaners, as the practice has been almost universally abandoned. When the writer was a boy—between sixty and seventy years ago—the practice was still in existence in the part of the world in which he trundled hoops and tossed the ball, and the recollection of the harvest field and the gleaners is among the pleasant memories of early life. Women, girls and boys followed the reapers after the sheaves had been bound, and the heads of grain left behind were gathered one by one into a bouquet-like head, and each handful bound as the larger sheaves were bound. When the gleaning harvest was over, the heads were cut off, and sent to be thrashed and winnowed, the thrasher taking a percentage as toll for his work, and the miller had his toll for making the flour. The straw carefully cut from the heads was divided into sections for the straw-plat maker. It had to be carefully bleached by sulphur under inverted tubs, and then each straw would be split into four sections when the finer kind of straw-plait was desired. Sometimes the gleaner would be an adept in plaiting, and the made-up material sold to the hat or bonnet maker at so much per yard. An industrious gleaner with a family would often get in this way flour enough for bread for the greater part of the year, and good employment during the long winter evenings to obtain other necessaries or even luxuries. But even in those days gleaners were only allowed to follow sickle-cut harvest fields. They dare not follow the scythe, and the reaping machines wholly abolished the practice. Fun for boys and girls was profitable as well as useful in those days. Now business and pleasure have traveled widely apart.

CHRYSANTHEMUM CULTURE.—Mr. Alexander McClellan, Newport, Rhode Island, says: "I heartily recommend the system of growing chyrsanthemums in boxes as described under 'Successful Chrysanthemum Culture' in the MONTHLY, Vol. VI, pp. 209. Boxes about 6 ft. long, 1 ft. wide and 8 in. deep are a good size for convenient handling; a depth of 3½ or 4 in. of soil is sufficient, and by having the boxes 8 in. deep, there is ample room for drainage at the bottom, and space enough at the top for watering.

In the article referred to, it is stated that for fertilizing 'clay and sheep manure were used.' Undoubtedly 'Clay's Fertilizer' was meant. Judging by the blooms I saw exhibited by Mr. Barr at the Springfield, Mass., show last month, his system of growing appears to be about right.

Of course no one having houses with benches at command would ever think of growing chrysanthemums in boxes out of doors, but for those of us who have only graperies or peach houses in which to flower our sets, the box system is far in advance of the old plan of planting out and potting up."

THE CLEMATIS DISEASE.—Your note on the Clematis disease in your December number may lead to some interesting information. I have been growing some fifty plants for the

past seven years, and, of the large flowered varieties, fully ninety-eight per cent. of young plants develop the disease the first year planted out. My experience is that by the end of the second year, the plant is either entirely used up, dead or nearly so; or it has in a measure partly overcome the trouble, and will continue to grow stronger each following year, occasionally having one shoot out of many die back, until it seems to reach a point where there seems to be no disease. During the summer months I note those plants that are showing the disease, noting whether it has it badly or slightly. Where in bad form, I remove it in the spring, carefully wash away all soil with the hose and then examine it carefully. If the disease has gotten well down into the neck of the plant I generally discard it, but if I can clean off all evidence of disease, and still leave an uninjured crown, I replant in a reserve bed, and in some instances the plants have recovered and in time go back to the porch. Last spring I took up one that I grew some three years. While it had the disease quite badly, it threw up more shoots than died during the summer. I found it quite badly diseased; but noticing its strong roots, in fact many sets of roots—I tried an experiment in cutting off entirely the neck and the tier of roots next to it and planted it. This was done rather late in the season, after growth had begun. It threw up one shoot some six or more feet in length, but did not bloom. I will examine it with interest next spring. My reserve bed is a clay loam, while the clematis bed proper is a light black soil. The apparent recovery in this clay loam puzzles me as to whether the soil is a factor There was a noted vine of the pale blue form of Jackmani, in the village. I had known it for six or more years. It seemed entirely free of disease. The owner moved away and sold the vine to my neighbor for $5.00. He divided it, giving me two plants. These I planted entirely remote from my others, and they show no sign of disease. I am so fully convinced with the question of disease that it is a case of the survival of the fittest, and as the survivors are so handsome, I have already planned to set out next spring quite a quantity of young plants in my trial grounds, growing them there for a few years, and in time using those that pull through, where wanted. Where I do replace a diseased plant with a sound one, I am careful to take away all the old soil from the bed before planting for fear of the germs. W. C. EGAN.

Chicago.

WATER IN WOOD.—It is customary for gardening writers to say, in round numbers, that a tree is half charcoal and half water. The Boston *Transcript* gives some figures in detail, as to the varying character of the watery portion, which we transfer to our pages. The question of evaporation is involved in this watered question, and hence has a practical value in transplanting as well as in other gardening operations :—

"It has commonly been estimated that green wood, when cut down, contains about 45 per cent. of its weight in moisture, but in the forests of Central Europe wood cut down in winter is said to hold more than 40 per cent. of water at the end of the following summer. Kept for several years in a dry place wood retains from 15 to 20 per cent. of water, while that which has been thoroughly dessicated will, when exposed to air under ordinary circumstances, absorb 5 per cent. of water in the first three days and will continue to absorb it until it reaches from 14 to 16 per cent., as a normal standard, the amount fluctuating above and below this standard according to the state of the atmosphere. It has been found that, by exposing green wood to a temperature of 212 degrees Fahrenheit, the loss of weight equalled 45 per cent., and further, on exposing small prisms of wood one-half inch square and eight inches long, cut out of billets that had been stored for two years, to the action of superheated steam for two hours, their loss of weight was found to be from 15 to 45 per cent., according to the temperature of the steam."

WINTER SCENERY PLEASURES.—They are much to be envied who dwell where summer time reigns all the year, but the pleasures of winter are by no means to be despised. In the wild woods, winter has often given a rather weather-beaten look to the scenery; but in a garden, where trees and shrubs of many varied forms have been gathered together, the snow and icicles take on so many different characters that some of the scenes we experience are never to be forgotten. We can, all who have enjoyed these pleasures, readily share

the enthusiasm of the writer of the following, Alderman Hallam, of Toronto, which is extracted from a letter of recent date. The cut is to be credited to the kindness of the Toronto *Globe*:

"I am sending you a cut showing part of my grounds during a snow-storm. Immediately after the storm the whole scene was like fairyland.

The deciduous trees were covered with ice and every branch seemed tipped with silver. When the sun came out the sight was enchanting and when the atmosphere became warm the ice-clad trees began to shake, crack—crack—crack.

The evergreens for some reason that I cannot explain were not so affected but the snow, as you will see by the cut, remained on them.

The telegraph wires were covered with millions of icicles. This enchanting scene lasted for two or three days but immense damage was done in the breaking down of the shade trees.

TORONTO SNOW SCENE.

past seven years, and, of the large flowered varieties, fully ninety-eight per cent. of young plants develop the disease the first year planted out. My experience is that by the end of the second year, the plant is either entirely used up, dead or nearly so; or it has in a measure partly overcome the trouble, and will continue to grow stronger each following year, occasionally having one shoot out of many die back, until it seems to reach a point where there seems to be no disease. During the summer months I note those plants that are showing the disease, noting whether it has it badly or slightly. Where in bad form, I remove it in the spring, carefully wash away all soil with the hose and then examine it carefully. If the disease has gotten well down into the neck of the plant I generally discard it, but if I can clean off all evidence of disease, and still leave an uninjured crown, I replant in a reserve bed, and in some instances the plants have recovered and in time go back to the porch. Last spring I took up one that I grew some three years. While it had the disease quite badly, it threw up more shoots than died during the summer. I found it quite badly diseased; but noticing its strong roots, in fact many sets of roots—I tried an experiment in cutting off entirely the neck and the tier of roots next to it and planted it. This was done rather late in the season, after growth had begun. It threw up one shoot some six or more feet in length, but did not bloom. I will examine it with interest next spring. My reserve bed is a clay loam, while the clematis bed proper is a light black soil. The apparent recovery in this clay loam puzzles me as to whether the soil is a factor There was a noted vine of the pale blue form of Jackmani, in the village. I had known it for six or more years. It seemed entirely free of disease. The owner moved away and sold the vine to my neighbor for $5.00. He divided it, giving me two plants. These I planted entirely remote from my others, and they show no sign of disease. I am so fully convinced with the question of disease that it is a case of the survival of the fittest, and as the survivors are so handsome, I have already planned to set out next spring quite a quantity of young plants in my trial grounds, growing them there for a few years, and in time using those that pull through, where wanted. Where I do replace a diseased plant with a sound one, I am careful to take away all the old soil from the bed before planting for fear of the germs. W. C. EGAN.

Chicago.

WATER IN WOOD.—It is customary for gardening writers to say, in round numbers, that a tree is half charcoal and half water. The Boston *Transcript* gives some figures in detail, as to the varying character of the watery portion, which we transfer to our pages. The question of evaporation is involved in this watered question, and hence has a practical value in transplanting as well as in other gardening operations :—

"It has commonly been estimated that green wood, when cut down, contains about 45 per cent. of its weight in moisture, but in the forests of Central Europe wood cut down in winter is said to hold more than 40 per cent. of water at the end of the following summer. Kept for several years in a dry place wood retains from 15 to 20 per cent. of water, while that which has been thoroughly dessicated will, when exposed to air under ordinary circumstances, absorb 5 per cent. of water in the first three days and will continue to absorb it until it reaches from 14 to 16 per cent., as a normal standard, the amount fluctuating above and below this standard according to the state of the atmosphere. It has been found that, by exposing green wood to a temperature of 212 degrees Fahrenheit, the loss of weight equalled 45 per cent., and further, on exposing small prisms of wood one-half inch square and eight inches long, cut out of billets that had been stored for two years, to the action of superheated steam for two hours, their loss of weight was found to be from 15 to 45 per cent., according to the temperature of the steam."

WINTER SCENERY PLEASURES.—They are much to be envied who dwell where summer time reigns all the year, but the pleasures of winter are by no means to be despised. In the wild woods, winter has often given a rather weather-beaten look to the scenery; but in a garden, where trees and shrubs of many varied forms have been gathered together, the snow and icicles take on so many different characters that some of the scenes we experience are never to be forgotten. We can, all who have enjoyed these pleasures, readily share

the enthusiasm of the writer of the following, Alderman Hallam, of Toronto, which is extracted from a letter of recent date. The cut is to be credited to the kindness of the Toronto *Globe*:

"I am sending you a cut showing part of my grounds during a snow-storm. Immediately after the storm the whole scene was like fairyland.

The deciduous trees were covered with ice and every branch seemed tipped with silver. When the sun came out the sight was enchanting and when the atmosphere became warm the ice-clad trees began to shake, crack—crack—crack.

The evergreens for some reason that I cannot explain were not so affected but the snow, as you will see by the cut, remained on them.

The telegraph wires were covered with millions of icicles. This enchanting scene lasted for two or three days but immense damage was done in the breaking down of the shade trees.

TORONTO SNOW SCENE.

INTENTIONAL SECOND EXPOSURE

The birch, oak and Silver Maples suffered the most and thousands of trees in the neighborhood of Toronto were destroyed.

I wish I could describe the scene as I and others saw it."

THE DEVELOPMENT OF ROOTS FROM CUTTINGS.—The propagation of various plants from hard and soft wood cuttings shows a wide difference among species and even individuals, regarding the development of the callus. Some species when propagated from cuttings, whether of soft or hard wood, almost invariably form a large callus, while others may form none

Fig. 1. Origin of Root.

at all, and individuals of a callus-forming species will not infrequently be found developing their roots without any signs of the formation of a callus. This peculiar behavior among plants leads me to doubt the general statement that roots formed upon cuttings are developed from the granular mass usually called the callus. Most certainly, the roots developed upon cuttings forming no callus did not come from a differentiation of this granular mass.

In proof of the theory that the roots do come from the callus, a series of careful experiments were begun. The material used covered both the field of woody and herbaceous cuttings,—grapes, currants, and willows formed the hard-wood cuttings; while potatoes, tomatoes, geraniums and coleus were the soft plants studied.

From the observations made upon this subject, which have now extended over a period of six years, I am prepared to make this statement at the outset, i. e., it is not from the callus that the roots formed on cuttings take their origin. In fact, the callus, so far as I can detect, has no connection with, and is not necessarily concerned in the origin or development of roots from cuttings. The root takes its origin in and is an extension of the active, formative material of the cambium layer in woody exogens, such as the grape and currant. In all cases I believe that the proton is in the xylem rather than in the phloem portion of the fibro-vascular tissue of the plant. In hard-wood, such as that of grapes and currants, it is nearer the true cambium than in the herbaceous cuttings of geraniums, coleus and allied plants.

In case of the geranium and coleus, both of which have the endogenous structure of stem, the origin of the root is somewhat more difficult to determine, but an examination of the material already prepared justifies me in stating that for these two plants at least, the roots have their origin in and are a continuation of the fibro-vascular system of the endogenous stem. This I realize is contrary to the generally accepted theory, and contrary to all statements in popular works upon the subject. However, photographs here presented are sufficient to establish the point which I maintain.

The callus, a granular mass of corky or woody material which forms over cut surfaces which are beneath ground, appears to me as synonymous in both its origin and function to the scab which forms over a wound upon an animal whose flesh unites by what is known as the second intention, *i. e.*, where suppuration takes place. To my mind the callus in the vegetable kingdom is the manifestation of the efforts of the plant to overcome the effects of injuries or wounds. It is, in other words, one of the accompaniments of a healing or mending process. But, as before stated, it is in no way connected with the origin or development of roots from cuttings, as roots may

be and frequently are developed from cuttings which give no manifestation of the development of a callus. The origin and growth of the callus has been very carefully worked out by Hansen. (See Sachs, page 582.)

"Hansen has investigated in detail the formation of the callus on the cut-off leaves and flower-stalks of *Achimenes grandis*, leaves of *Begonia rex* and shoots of *Peperomia*. These organs planted with the cut surface in water, or moist sand or soil, develop the callus there. The second section by which the 'cutting' is separated from the parent plant is the external stimulus to the commencement of processes of growth on the surface of the wound. In the first place the layer of cells bounding the cut surface perishes: this dead tissue is frequently separated from the living tissue still further by the formation of several layers of cork, a process also common elsewhere, and which may be produced by wounding masses of tissue which are still living. Beneath this protection there now begins an active growth of all the tissue-elements still provided with protoplasm: *i. e.*, the cells of the epidermis, collenchyma and cortical tissue. The epidermis cells here perform in addition a peculiar function, growing out into long root-hairs which supply the young callus with water and nutritive salts. The callus grows not merely from the cut surface, but also extends laterally, so that the stem of a leaf-cutting often swells up to double its original diameter, and the callus as a thick cushion includes the cut end of the petiole. This mass of tissue at first consists of nothing but similar parenchyma cells; but after some time numerous vascular bundles are differentiated in it, and extend in all directions towards the surface of the callus. At various spots on the tissue of the callus superficial cells now become rich in protoplasm, divide actively, and produce a small-celled embryonic tissue, which is conspicuously marked off from the surrounding tissue of the callus. These embryonic masses of tissue or growing-points soon become elevated, produce leaves, and thus emerge as young shoots. At the same time embryo roots develop in the interior of the callus; these break through the tissues, penetrate the soil, and contribute to the nutrition of the new shoots."

This deduction in regard to the development of the root is merely an incidental matter, as is evident from the text, and it is not justified by the results of the investigations of the writer.

The true explanation of the origin of roots from cuttings is the same as that given by Sachs on page 15 of "The Physiology of Plants:"

"When a new root-fibre is about to arise, there is formed in the interior of the tissue of the mother-organ, for instance inside a root, or a shoot-axis, or even a leaf, in the first place a new growing point, which usually consists of small-celled embryonic tissue, which becomes at once clothed on the outside with the root-

Fig. 2. (x) Root axis. (b) Cambium layer of original cutting.

cap. These new growing points generally arise on the outer side of the vascular bundles of the mother organ, and when the young roots begin to grow, they must first break through its cortical tissue, as may easily be observed in fresh roots: the lateral roots of these protrude from slits, the edges of which are often raised up in a lip-like manner."

This theory of development, while accepted for secondary or lateral roots or for new roots arising from the axis of the plant, seems never to have been thought to hold in the development of roots from cuttings. But in the face

The birch, oak and Silver Maples suffered the most and thousands of trees in the neighborhood of Toronto were destroyed.

I wish I could describe the scene as I and others saw it."

THE DEVELOPMENT OF ROOTS FROM CUTTINGS.—The propagation of various plants from hard and soft wood cuttings shows a wide difference among species and even individuals, regarding the development of the callus. Some species when propagated from cuttings, whether of soft or hard wood, almost invariably form a large callus, while others may form none

Fig. 1. Origin of Root.

at all, and individuals of a callus-forming species will not infrequently be found developing their roots without any signs of the formation of a callus. This peculiar behavior among plants leads me to doubt the general statement that roots formed upon cuttings are developed from the granular mass usually called the callus. Most certainly, the roots developed upon cuttings forming no callus did not come from a differentiation of this granular mass.

In proof of the theory that the roots do come from the callus, a series of careful experiments were begun. The material used covered both the field of woody and herbaceous cuttings,—grapes, currants, and willows formed the hard-wood cuttings ; while potatoes, tomatoes, geraniums and coleus were the soft plants studied.

From the observations made upon this subject, which have now extended over a period of six years, I am prepared to make this statement at the outset, i. e., it is not from the callus that the roots formed on cuttings take their origin. In fact, the callus, so far as I can detect, has no connection with, and is not necessarily concerned in the origin or development of roots from cuttings. The root takes its origin in and is an extension of the active, formative material of the cambium layer in woody exogens, such as the grape and currant. In all cases I believe that the proton is in the xylem rather than in the phloem portion of the fibro-vascular tissue of the plant. In hard-wood, such as that of grapes and currants, it is nearer the true cambium than in the herbaceous cuttings of geraniums, coleus and allied plants.

In case of the geranium and coleus, both of which have the endogenous structure of stem, the origin of the root is somewhat more difficult to determine, but an examination of the material already prepared justifies me in stating that for these two plants at least, the roots have their origin in and are a continuation of the fibro-vascular system of the endogenous stem. This I realize is contrary to the generally accepted theory, and contrary to all statements in popular works upon the subject. However, photographs here presented are sufficient to establish the point which I maintain.

The callus, a granular mass of corky or woody material which forms over cut surfaces which are beneath ground, appears to me as synonymous in both its origin and function to the scab which forms over a wound upon an animal whose flesh unites by what is known as the second intention, *i. e.*, where suppuration takes place. To my mind the callus in the vegetable kingdom is the manifestation of the efforts of the plant to overcome the effects of injuries or wounds. It is, in other words, one of the accompaniments of a healing or mending process. But, as before stated, it is in no way connected with the origin or development of roots from cuttings, as roots may

be and frequently are developed from cuttings which give no manifestation of the development of a callus. The origin and growth of the callus has been very carefully worked out by Hansen. (See Sachs, page 582.)

"Hansen has investigated in detail the formation of the callus on the cut-off leaves and flower-stalks of *Achimenes grandis*, leaves of *Begonia rex* and shoots of *Peperomia*. These organs planted with the cut surface in water, or moist sand or soil, develop the callus there. The second section by which the 'cutting' is separated from the parent plant is the external stimulus to the commencement of processes of growth on the surface of the wound. In the first place the layer of cells bounding the cut surface perishes: this dead tissue is frequently separated from the living tissue still further by the formation of several layers of cork, a process also common elsewhere, and which may be produced by wounding masses of tissue which are still living. Beneath this protection there now begins an active growth of all the tissue-elements still provided with protoplasm: *i. e.*, the cells of the epidermis, collenchyma and cortical tissue. The epidermis cells here perform in addition a peculiar function, growing out into long root-hairs which supply the young callus with water and nutritive salts. The callus grows not merely from the cut surface, but also extends laterally, so that the stem of a leaf-cutting often swells up to double its original diameter, and the callus as a thick cushion includes the cut end of the petiole. This mass of tissue at first consists of nothing but similar parenchyma cells; but after some time numerous vascular bundles are differentiated in it, and extend in all directions towards the surface of the callus. At various spots on the tissue of the callus superficial cells now become rich in protoplasm, divide actively, and produce a small-celled embryonic tissue, which is conspicuously marked off from the surrounding tissue of the callus. These embryonic masses of tissue or growing-points soon become elevated, produce leaves, and thus emerge as young shoots. At the same time embryo roots develop in the interior of the callus; these break through the tissues, penetrate the soil, and contribute to the nutrition of the new shoots."

This deduction in regard to the development of the root is merely an incidental matter, as is evident from the text, and it is not justified by the results of the investigations of the writer.

The true explanation of the origin of roots from cuttings is the same as that given by Sachs on page 15 of "The Physiology of Plants:"

"When a new root-fibre is about to arise, there is formed in the interior of the tissue of the mother-organ, for instance inside a root, or a shoot-axis, or even a leaf, in the first place a new growing point, which usually consists of small-celled embryonic tissue, which becomes at once clothed on the outside with the root-

Fig. 2. (x) Root axis. (b) Cambium layer of original cutting.

cap. These new growing points generally arise on the outer side of the vascular bundles of the mother organ, and when the young roots begin to grow, they must first break through its cortical tissue, as may easily be observed in fresh roots: the lateral roots of these protrude from slits, the edges of which are often raised up in a lip-like manner."

This theory of development, while accepted for secondary or lateral roots or for new roots arising from the axis of the plant, seems never to have been thought to hold in the development of roots from cuttings. But in the face

INTENTIONAL SECOND EXPOSURE

of this I once more make the statement that roots *do not* have their origin in the callus, but *do grow* from a fundament formed in the tissue of the portion of a plant used as a cutting, in a manner precisely similar to that of the development of new roots from a root on the plant axis of a seedling.

L. C. CORBETT.

West Virginia University.

Fig. 3. (x) Cross section of a young root imbedded in the tissue of the cutting. (a) Tissue of cutting.

NEW OR RARE PLANTS.

THE SCARLET LYCHNIS.—Many good old hardy plants are rare. The Scarlet Lychnis, *L. Chalcedonica*, is one that should not be overlooked.

CUPHEA LANCEOLATA.—A very old Mexican annual in our gardens, is the pretty rose-colored *Cuphea lanceolata*. Among the novelties for 1897, the seedsmen are offering a pure white variety.

ERIGERON HYBRIDUS ROSEUS. — Haage & Schmidt say of it: "Interesting and attractive new hybrid of *E. aurantiacus* and *E. Villarsi*. Similar in habit to the latter, it resembles regarding the flowers more the *E. aurantiacus*. The flowers, about one inch across, are of a beautiful purplish-rose, while the disk is of a clear golden-yellow. When sown early it flowers the first year from seed. It is a hardy perennial, producing its lovely flowers without interruption from May until late in the autumn."

CHIMONANTHUS FRAGRANS. — The *Chimonanthus fragrans* is otherwise known as the Chinese Allspice. There are few flowers more deliciously fragrant. It is, however, rarely seen in our ornamental gardens, as the flowers open with a few warm suns in winter, only to be destroyed by the succeeding frost; but if a few branches are cut off and placed in a warm room they easily expand and fill the room with a most delightful fragrance. It is closely related to our well known Sweet Shrub, *Calycanthus floridus*.

STRIPED HELENIUM.—There are few flowers blooming in autumn in our garden that give more pleasure than *Helenium autumnale*. A correspondent of the *London Journal of Horticulture* notes that a striped variety has been introduced, which gives an additional charm to this beautiful garden flower. The disk, or central portion, usually yellow, is in this case partly of a maroon; while the ray florets are yellow, freely striped with red. We have no notice that this has been yet introduced into the American gardens.

KOELREUTERIA PANICULATA.—This beautiful Japanese tree is not nearly as much appreciated in ornamental gardening as it deserves to be. Nurserymen generally say that the orders for it are comparatively limited. It is, we think, one of the most beautiful of our small trees, having striking characteristics at all seasons. When in the springtime of its growth, few fern fronds are prettier than the leaves of this tree. At midsummer, it is a complete mass of golden beauty, while in the fall of the year, its rich crimson foliage vies with many of our American trees that have been celebrated in this respect. Even in the winter time the characteristic growth of the branches are particularly striking. The whole head of the tree, in fact, presents beautiful outlines that would be admired by any lover of artistic rules.

THE HARDY FLOWER GARDEN.

RUDBECKIA LACINIATA FL. PL. "GOLDEN GLOW."—Of recent introductions, perhaps none have given more satisfaction than the "Golden Glow" Rudbeckia. The foliage is not strikingly attractive, and, as may be inferred by the name, the flower is the pleasing feature. At first glance, the flower might be taken to be the well-known double sunflower, —*Helianthus multiflorus plenus*,—which it closely resembles. The color, however, is of a brighter yellow, and the flower is ball-shaped. It blooms profusely, and forms a most attractive plant. The flowers appear about August, and are excellent for cutting, lasting well. In low ground it is at its best, and grows to a height of six or eight feet; but it is not necessary that it should be thus situated, although best results may not then be looked for. In the Meehan Nurseries it stood a hot and dry summer in comparatively dry ground, the roots, however, being well mulched, which is recommended for it in any situation. It suckers well from the ground.

HARDY CACTUSES.—For many situations in flower gardening, few plants are more effective than hardy cactuses. The one most frequently seen is *Opuntia Rafinesquii*, a smooth-jointed form, which has brilliant yellow flowers at mid-summer. Until late years it was confounded with *Opuntia vulgaris*, which is a more slender grower, but very hard to distinguish from the former one. There are varieties referred to *O. Rafinesquii*, that are more distinct than this. The common form of *Opuntia* from the plains, *O. Missouriensis*, also with yellow flowers, but having the joints covered with slender silky hair, makes a very pretty flower garden ornament.

DICENTRA SPECTABILIS.—*Dicentra spectabilis* is perhaps the grandest of all the kinds of Breeches-flower introduced into gardens. It is sometimes known as Bleeding Heart. It is a native of China and must make a grand show in the woods of that country in early spring. It is one of that class of hardy herbaceous plants which dislikes transplanting. Left alone, it improves in grandeur from year to year. To propagate them pinch off the early flowers from some one branch.

FRUITS AND VEGETABLES.

PRATT'S STRAWBERRY GARDEN, READING, MASS.—The Massachusetts Horticultural Society offers premiums for the best gardens, as well as the best garden products. The committee say the following regarding a fine strawberry garden:—

"Mr. Pratt, having made his entry for the best Fruit Garden, the Committee made their visit on the 18th of June. We found that he devoted about fifteen acres to the cultivation of Strawberries, and we were informed that his business is more for the sale of plants than fruit. A complete system of irrigation is in use, which of course is indispensable. About one ton of fertilizer is used to each acre, the chemicals being obtained from a reliable source, Mr. Pratt doing his own mixing, using 1,500 pounds of dissolved Bone Black and 500 pounds of high-grade Sulphate of Potash, costing about $22. A bed is fruited but one season, and first-class fruit is obtained. Mr. Pratt says that his experience with fruiting an old bed has not been satisfactory; the berries are second-class and give the grower a poor reputation.

The first fruit picked for the market was June 15th, from Beder Wood; the last picking was on the 10th of July, from Beverly, Timbrell, and Fountain. Two acres were fruited that were grown in the narrow row system, for fruit only, Beverly and Barton's Eclipse yielding 20,000 baskets of first-class fruit. Mr. Pratt says: 'I am satisfied that with such yield it pays to raise the fruit at six cents a a quart,' and that he received twice that at wholesale."

INSECTS IN ORANGES.—No one is surprised to find a worm in an apple, and occasionally in other fruits, but it is a surprise to learn that the orange is getttng to be infested as well as the rest. The worm in the orange is named by the entomologist *Trypeta ludens*. So far as has been discovered it has not been found in any of the oranges grown in the different parts of the United States, although it is said it is getting quite common in the fruit grown beyond our Mexican borders. Since writing the above paragraph we notice in the *Florida Farmer*, of November 7th, that the worms have been found in oranges grown in New Mexico.

of this I once more make the statement that roots *do not* have their origin in the callus, but *do grow* from a fundament formed in the tissue of the portion of a plant used as a cutting, in a manner precisely similar to that of the development of new roots from a root on the plant axis of a seedling.

L. C. CORBETT.

West Virginia University.

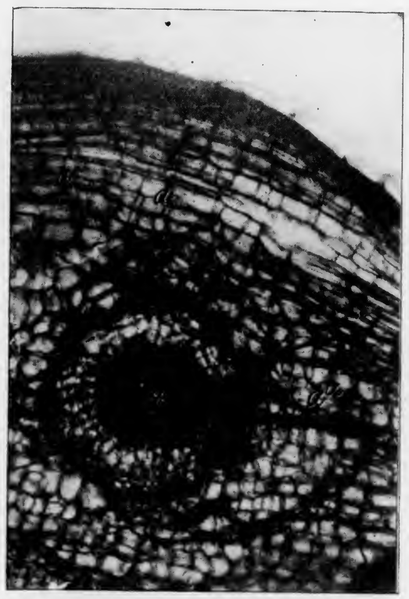


Fig. 3. (x) Cross section of a young root imbedded in the tissue of the cutting. (a) Tissue of cutting.

NEW OR RARE PLANTS.

THE SCARLET LYCHNIS.—Many good old hardy plants are rare. The Scarlet Lychnis, *L. Chalcedonica*, is one that should not be overlooked.

CUPHEA LANCEOLATA.—A very old Mexican annual in our gardens, is the pretty rose-colored *Cuphea lanceolata*. Among the novelties for 1897, the seedsmen are offering a pure white variety.

ERIGERON HYBRIDUS ROSEUS. — Haage & Schmidt say of it: "Interesting and attractive new hybrid of *E. aurantiacus* and *E. Villarsi*. Similar in habit to the latter, it resembles regarding the flowers more the *E. aurantiacus*. The flowers, about one inch across, are of a beautiful purplish-rose, while the disk is of a clear golden-yellow. When sown early it flowers the first year from seed. It is a hardy perennial, producing its lovely flowers without interruption from May until late in the autumn."

CHIMONANTHUS FRAGRANS. — The *Chimonanthus fragrans* is otherwise known as the Chinese Allspice. There are few flowers more deliciously fragrant. It is, however, rarely seen in our ornamental gardens, as the flowers open with a few warm suns in winter, only to be destroyed by the succeeding frost; but if a few branches are cut off and placed in a warm room they easily expand and fill the room with a most delightful fragrance. It is closely related to our well known Sweet Shrub, *Calycanthus floridus*.

STRIPED HELENIUM.—There are few flowers blooming in autumn in our garden that give more pleasure than *Helenium autumnale*. A correspondent of the *London Journal of Horticulture* notes that a striped variety has been introduced, which gives an additional charm to this beautiful garden flower. The disk, or central portion, usually yellow, is in this case partly of a maroon; while the ray florets are yellow, freely striped with red. We have no notice that this has been yet introduced into the American gardens.

KOELREUTERIA PANICULATA.—This beautiful Japanese tree is not nearly as much appreciated in ornamental gardening as it deserves to be. Nurserymen generally say that the orders for it are comparatively limited. It is, we think, one of the most beautiful of our small trees, having striking characteristics at all seasons. When in the springtime of its growth, few fern fronds are prettier than the leaves of this tree. At midsummer, it is a complete mass of golden beauty, while in the fall of the year, its rich crimson foliage vies with many of our American trees that have been celebrated in this respect. Even in the winter time the characteristic growth of the branches are particularly striking. The whole head of the tree, in fact, presents beautiful outlines that would be admired by any lover of artistic rules.

THE HARDY FLOWER GARDEN.

RUDBECKIA LACINIATA FL. PL. "GOLDEN GLOW."—Of recent introductions, perhaps none have given more satisfaction than the "Golden Glow" Rudbeckia. The foliage is not strikingly attractive, and, as may be inferred by the name, the flower is the pleasing feature. At first glance, the flower might be taken to be the well-known double sunflower, —*Helianthus multiflorus plenus*,—which it closely resembles. The color, however, is of a brighter yellow, and the flower is ball-shaped. It blooms profusely, and forms a most attractive plant. The flowers appear about August, and are excellent for cutting, lasting well. In low ground it is at its best, and grows to a height of six or eight feet; but it is not necessary that it should be thus situated, although best results may not then be looked for. In the Meehan Nurseries it stood a hot and dry summer in comparatively dry ground, the roots, however, being well mulched, which is recommended for it in any situation. It suckers well from the ground.

HARDY CACTUSES.—For many situations in flower gardening, few plants are more effective than hardy cactuses. The one most frequently seen is *Opuntia Rafinesquii*, a smooth-jointed form, which has brilliant yellow flowers at mid-summer. Until late years it was confounded with *Opuntia vulgaris*, which is a more slender grower, but very hard to distinguish from the former one. There are varieties referred to *O. Rafinesquii*, that are more distinct than this. The common form of *Opuntia* from the plains, *O. Missouriensis*, also with yellow flowers, but having the joints covered with slender silky hair, makes a very pretty flower garden ornament.

DICENTRA SPECTABILIS.—*Dicentra spectabilis* is perhaps the grandest of all the kinds of Breeches-flower introduced into gardens. It is sometimes known as Bleeding Heart. It is a native of China and must make a grand show in the woods of that country in early spring. It is one of that class of hardy herbaceous plants which dislikes transplanting. Left alone, it improves in grandeur from year to year. To propagate them pinch off the early flowers from some one branch.

FRUITS AND VEGETABLES.

PRATT'S STRAWBERRY GARDEN, READING, MASS.—The Massachusetts Horticultural Society offers premiums for the best gardens, as well as the best garden products. The committee say the following regarding a fine strawberry garden:—

"Mr. Pratt, having made his entry for the best Fruit Garden, the Committee made their visit on the 18th of June. We found that he devoted about fifteen acres to the cultivation of Strawberries, and we were informed that his business is more for the sale of plants than fruit. A complete system of irrigation is in use, which of course is indispensable. About one ton of fertilizer is used to each acre, the chemicals being obtained from a reliable source, Mr. Pratt doing his own mixing, using 1,500 pounds of dissolved Bone Black and 500 pounds of high-grade Sulphate of Potash, costing about $22. A bed is fruited but one season, and first-class fruit is obtained. Mr. Pratt says that his experience with fruiting an old bed has not been satisfactory; the berries are second-class and give the grower a poor reputation.

The first fruit picked for the market was June 15th, from Beder Wood; the last picking was on the 10th of July, from Beverly, Timbrell, and Fountain. Two acres were fruited that were grown in the narrow row system, for fruit only, Beverly and Barton's Eclipse yielding 20,000 baskets of first-class fruit. Mr. Pratt says: 'I am satisfied that with such yield it pays to raise the fruit at six cents a a quart,' and that he received twice that at wholesale.''

INSECTS IN ORANGES.—No one is surprised to find a worm in an apple, and occasionally in other fruits, but it is a surprise to learn that the orange is getttng to be infested as well as the rest. The worm in the orange is named by the entomologist *Trypeta ludens*. So far as has been discovered it has not been found in any of the oranges grown in the different parts of the United States, although it is said it is getting quite common in the fruit grown beyond our Mexican borders. Since writing the above paragraph we notice in the *Florida Farmer*, of November 7th, that the worms have been found in oranges grown in New Mexico.

INTENTIONAL SECOND EXPOSURE

PREVENTION OF INJURY FROM FROST.—The disastrous frosts in the South during recent years have set many minds in motion, and in many ways it will not be without its good effect, strange as such a fact may appear. Fruit growers are not only paying attention to other crops, not so susceptible to frost, but are experimenting in the line of frost preventives. It was noted in a recent issue of MEEHANS' MONTHLY that in Japan the orchard prunings were gathered and heaped to the windward where they would be set on fire when frost was expected, the smoke and not the heat being the prevention. The *Pacific Rural Press* has the following note in a recent issue, showing improvements on the idea as used in California:

"A more detailed account of one affair for smoke and steam making is described by R. W. Meacham, which is said to have elevated the 5 a. m. temperature 10 degrees at a trial recently made. The outfit is simple and cheap. A piece of ordinary chicken-wire screen four feet square is fastened at the corners to four stakes set or driven in the ground, the screen being about two feet from the ground. Six inches in thickness of wet leaves or straw is placed on the screen, with a can of crude petroleum underneath the leaves or straw. When the oil is lighted a dense white smoke arises which soon fills the orchard, and so heavy that it does not rise much higher than the tree-tops. There is an entire absence of the sooty smoke which in experiments in years gone by proved unfit for use, because of the injury to the fruit, but in its stead is a white smoke. It is claimed that twenty of these baskets are ample for a ten-acre orchard. It will be the part of wisdom for fruit growers everywhere to emulate the example of the Riverside people, and attack the frost problem resolutely."

CURRANTS.—Some amusing statements have recently been made in the public papers in relation to some custom house interpretations as to what is meant in the tariff schedule by currants. Currant, as the American fruit grower understands it, is a little bunch of red or white fruit, well known as the product of the currant bush of gardens. Many do not know that the currant of the grocer does not belong to this family of fruits, but is really a very small form of grape. It seems to have been first cultivated as a great market fruit at Corinth, in Greece, and in this way obtained the name of currant which had already been appropriated by our well-known garden fruit. This variety of grape bears no seeds. In this connection it may be of interest to note that in many bunches of grapes, whether of the foreign or the native varieties, small berries among the larger ones will frequently be found, and these small berries are seedless just as the currant of Greece is seedless. Just why it is that a seedless grape should be smaller than one which produces seeds, has not been developed to satisfaction, so far as can be found in treatises on this subject.

TOMATO CULTURE IN THE OLD WORLD.—Notwithstanding the fact that tomato sauce has been known and appreciated for many years as one of the great delicacies of an Englishman's table,—as the readers of the writings of Dickens may very well remember, in the case where mutton chops and tomato sauce played such an important part in a breach-of-promise case,—it is only during the last few years that this fruit has come into general use something akin to its popularity in America. It is said that large glass houses are erected expressly for their cultivation. The plants are grown in large pots, and are said to be raised very successfully in this way; the plants producing much more abundantly than when grown in benches as with us. They are, however, abundantly supplied with manure.

THE PROPER WAY TO EAT A MELON.—A correspondent of the London *Journal of Horticulture*, writing from Athens, gives the English periodical a "new wrinkle," as the Americans would say, in how to eat a melon properly. He says you should never use sugar, but apply pepper to it, as it is far better to season it with. In our country, some melon eaters would prefer salt; but after all there are large numbers who would prefer to have it without either pepper or salt, and use the old fashion method of sugaring it. Indeed, some people believe that the only excuse for eating melons is for the sake of the sugar which they put over it. There does not seem to be any accounting for taste either in Greece, England or America.

RUSSIAN MULBERRY AS A BIRD-PROTECTOR.—A correspondent to the *National Stockman and Farmer*, Chicago, introduces the Russian Mulberry in a new role. He says:—"The Russian Mulberry is wonderfully productive, and a single tree of this fruit we find very tempting to the birds, as they prefer mulberries to almost any other fruit, and it affords plenty of fruit each season to keep quite a flock of birds out of mischief. The tree is very hardy and of strong, vigorous growth. It will pay to plant a few mulberry trees to protect your fruit and feed the birds."

Many persons would say, "We prefer that the birds destroy even half of our fruit provided they free the other half from destructive insects." But it is to be supposed that birds like variety as well as man, and would therefore divide their time between the orchard's products and the mulberry fruit.

IMPROVED STRAWBERRIES.—I am afraid that you have struck *something hard* when you say that "it is a well known fact that the varieties of strawberries in use to-day are in no respects better, if indeed as good, as many varieties that were popular over a quarter of a century ago," etc. If you mean by that, that the so-called leaf blight or strawberry fungus is just as much in evidence to-day as it was a quarter of a century ago, I agree with you. But, when you use the word "strawberries," I must take exception to your note. My memory goes back to the time of the Boston Pine, Alice Maude, and Hovey's Seedling. These berries were considered great things in those days. Then the Wilson came in, large and fine, but too acid. Afterwards the Cumberland Triumph, Capt. Jack and Crescent. The Cumberland was considered an immense berry. The Capt. Jack and Crescent the most prolific and wonderfully productive. Where are they now? They are consigned to the back hills of Jefferson County, Missouri, where their growers still think that there is nothing like them under the sun. And what of our present strawberry plants? Thirteen berries to fill a quart measure—the Brandywine, H. W. Beecher and a host of others. And in color and beauty—polished and varnished—inimitable. In shape and flavor superb, and healthy as the healthiest. And, for extreme earliness, the Michel's Early, in a favorable season, in this latitude, ripens its first fruits on the 27th of April. And now, regarding the strawberry fungus, I will write a few words. If strawberry plantations are renewed every year, which can easily be done, the strawberry blight will hurt nothing now or in the future; at the same time the berries will be improved in the operation. I renew my beds every year, and my berries are the finest in this section. After the picking season is over, I make new beds. I plant a shovelful of plants two feet apart in the rows, three feet apart the other way, pursue the row system, let the runners run. Pull out all weeds in the row, hoe the ground several times between the rows; and in the cold snaps of November cover them with hay. The old beds after the picking season are plowed under and the land planted to something else. F. K. STEELE.

Festus, Mo.

NEW STRAWBERRY, "THE BRANDYWINE."—New varieties of strawberries, of enormous size and wonderful productiveness, continually appear from year to year; but for some reason or other they become degenerate in a few years and others have to take their place. A new one, from Delaware, called the Brandywine, is now gaining popularity on the ground of great productiveness. It is said to have yielded last season 1650 quarts per acre from a single picking.

MISSOURI AS AN APPLE-GROWING REGION.—Missouri promises to be a powerful rival to the Hudson River, Western New York, and Eastern Canada in apple raising. The Ozark region is said to especially yield bountiful returns. Representative Bland has planted seventy acres of one kind of apple, which orchard is expected to make even greater returns than even the silver dollar could.

EARLY TOMATOES.—Mr. James Lawler, gardener to Alfred C. Harrison, of Chestnut Hill, Philadelphia, had his forced tomatoes in good quantities ripe for use on Christmas day. It would be well to note whether any one in that latitude has had them as early. The writer was ambitious to excel in his early days in all departments of gardening, but was happy if he had some ripe by the end of January. Forced tomatoes are usually of superior flavor.

BIOGRAPHY AND LITERATURE.

UNSELFISH NATURE.

If love were not, the wilding rose
Would in its leafy heart enclose
No chalice of perfume.

By mossy bank, in glen or grot,
No bird would build, if love were not,
No flower complacent bloom.

The sunset clouds would lose their dyes,
The light would fade from beauty's eyes,
The stars their fires consume.

And something missed from hall and cot
Would leave the world, if love were not,
A wilderness of gloom.

—FLORENCE EARLE COATES, in *Atlantic Monthly*.

EDWARD W. LINCOLN.—Gardening has lost a brilliant ornament in the death of Edward W. Lincoln, of Worcester, Mass. This occurred on the 15th of December. He was an eminent classical scholar, and he managed to make his brilliant scholastic acquirements add largely to the pleasures he derived from amateur gardening. As chairman of the Park Commission of Worcester, he will be a serious public loss. He was in his 76th year.

As we go to press, Worcester papers come to hand, showing how much his memory is esteemed by his fellow citizens. From one of these we take the following extract:

"Edward W. Lincoln has left the city of Worcester a monument for his personality in the parks that beautify the city, and that will forever tell of the man who made them possible and personally developed each feature and rejoiced in its beauty.

"Such public service is not common, and the lesson of Mr. Lincoln's life should prove a stimulating one in proving the satisfaction that disinterested effort for others brings the benefactor as well as the reward that comes from a grateful public. It will not be possible to just fill his place. He had leisure and opportunity, but he used them both to put in practical form the talent he had as a horticulturist. As chairman, his was the controlling mind on the park commission, and to carry out the farsighted policy he had shaped, courage and aggressive persistency were often necessary. He had positive ideas and stubbornly maintained them, but they prevailed because people believed in the sincerity and disinterestedness of the man. Worcester is particularly fortunate in her parks, the breathing spots for the people, and the father of the park system was Mr. Lincoln. Money could not buy what he gave for 25 years without material compensation."

A CLEVER ROGUE.—The rascal who for several years past has made a comfortable living in the vicinity of large cities by selling and planting a few sticks of Virginia Creeper as a rare and beautiful high-priced plant, gave the vicinity of New York his profitable attentions last autumn. It is hardly worth while exposing such rascality in a magazine like MEEHANS' MONTHLY, for surely no sensible person gives money to a total stranger, no matter what firm's name he may use in the attempt to collect. It is not worth while to hunt them up. One such rascal was caught after costly efforts by the former proprietor of the *Gardeners' Monthly*,—but he only got sixty days of hospitable boarding in the city palace, as the prison is called. He pursued his trade under modified methods as soon as expelled from the palace, and it is believed the "New-plant Man" is the same rogue.

SHARON CACTUS GUIDE.—A recent addition to the list of horticultural periodicals is the *Sharon Cactus Guide*, published at Sharon, Pa., an 8-paged monthly devoted entirely to those strange but interesting plants—cactuses. This class of plants is only rarely seen in cultivation,—at least in the North, and chiefly because of a feeling that, being different from the average run of plants, different and perhaps troublesome attention will be required. But there are many that are more to be feared, and, in fact, they take care of themselves with a little intelligent guidance. This little guide is full of practical information of their care.

LOCAL NAMES.—Mr. C. F. Saunders writes: "Referring to your correspondent's suggestion for a collection of local names of English plants (p. 239, Vol. VI.), there are at least two works which endeavor to cover this field. One is 'Popular Names of British Plants,' by R. C. A. Prior, and the other—a later work—is 'A Dictionary of English Plant Names,' by James Britten and Robert Holland. In this latter work, which is very comprehensive, *hagals* or *haggils* is mentioned as a local county name for the haws of the thorn, as your correspondent states."

THE GARDENS OF THE CURIOUS.—Miller, in his Gardeners' Dictionary, often remarks that such and such a plant is only to be found in the gardens of the curious. The Botanical Gardens of St. Louis and the gardens of Messrs. Thomas Meehan & Sons may be called "gardens of the curious," for in these gardens are found all sorts of plants from all parts of the country. They are kept in these gardens for the purpose of studying their peculiarities, their way of living and their way of reproducing themselves. Now, in these gardens, one may find the *Spigelia Marilandica* as it is found in its native wilds, growing in hazel thickets, beneath the Sugar Maple and the *Liquidambar*. In another portion of the garden, the *Dodecatheon Meadia* is seen sitting upon the moist face of a rock, with green moss and fern leaves beneath it and wild grasses towering over it. At the foot of a declivity, in a narrow ravine, with forest trees principally of oak and hickory, will be found *Phlox pilosa*—great beds of it—filling the air with its spicy fragrance, and between projecting rocks the *Hydrangea arborescens* (half way up the ravines) will grow in the utmost profusion with the Maiden-hair Fern, and other species of ferns, beautifying and making lovely these tortuous ravines. On the hill-sides, farther up, one may find the wild onion with its purple rays, and in the beds of shade the purple coneflower and the American Aloes. All of these things, and many—very many—more curious plants will be found in these gardens of the curious. In some open woodland near a purling brook may be found the *Cissus Ampelopsis*, climbing over the low bushes. This plant has the bloom of the grape vine and is blessed with two handsome names, either of which would be a fortune to its happy possessor. It is known also as *Vitis indivisa*. One who can read can easily see that it was a cross many years ago between the Virginia Creeper and the grape vine. It has the stem of the creeper, the leaf of the grape, the fruit and the tendrils are a happy mixture. The fruit is pink and blue with a bloom, only a few berries to the bunch. Because the berries are pink and blue, the farmers say they are poisonous. How easy it is to wrong this plant. Neither the grape nor the creeper are poisonous, and the grape and the creeper are its parents.

This plant grows in the gardens of the curious. It is well worthy of a place in the vineyard of common people. Is not there some people in this country who would like to own a grape vine which would produce both pink and blue grapes on every bunch? On the same bunch two kinds or colors of berries? Nature has started this theme for discussion. Cannot we obtain another cross on some of our table or wine grapes? Cannot we make use of this *Cissus Ampelopsis* by planting it amongst our vineyards and planting its seed to obtain parti-colored fruit? It might be done. It might also with proper manipulation produce for us several varieties of climbing vines of value.

F. K. STEELE.

Festus, Jefferson Co., Mo.

THE OLEANDER.—The history of the Oleander is almost co-eval with the history of the human race. It was the Rhododendron of the ancients, and when we read of the Rhododendron in the classical writings of the Greeks and Romans, the Oleander is to be understood. The Rhododendron, as we know it, was unknown to these ancients, so far as evinced by the writings that have come down to us. The flowers occupied a prominent place in their funeral practices, and were especially employed in the funeral ceremonies of females.

LINCOLN MEMORIAL TREE.—The Lincoln Memorial Elm, on the Presidential Mansion grounds, which blew down last year, was replaced by President Cleveland last fall. Such memorials should be instituted more than they now are. They are always pleasing and instructive.

GENERAL NOTES.

PRESERVING CUT FLOWERS. — Mr. Alex. McClellan, of Newport, Rhode Island, writes: "In the December number of the MONTHLY, pp. 240, appeared an article on 'Preserving Cut Flowers' recommending the placing of the stems in cold water. Much better results can be had by using warm water, *i. e.*, water of a higher temperature than that usually known as lukewarm. Another important point in getting cut flowers to keep fresh, is to put the stems into the water the instant they are cut from the plant. Let any one who uses Cannas for cut flowers try the experiment, and note the difference."

THE OLDEST CALIFORNIA ORCHARDS.—Californians are trying to place on record who and in what part of the State started the great business of fruit raising which now distinguishes that State from all in the Union. So far it seems to be in favor of a Mr. Wolfskill, who planted 80 acres of apricots and peaches and 6000 grapes, in the town of Winters, in Selena Co., in 1851. In 1855 the first apricots from these trees were sold.

SPANISH ORANGES.—It is said that the orange crop, in some parts of Spain, the present season, has been something enormous. Valentia oranges were never so plentiful in England where they are chiefly consumed. It is sad to reflect that the Spanish orange grower gets little of the proceeds for his own direct use, but has to go for the great national luxury of a war in Cuba, in which the orange grower can have little interest.

EXPOSITION AT MILWAUKEE.—The beautiful and prosperous city intends to set its light on a hill, and not keep it under a bushel, by a great exposition on its fifty years of age, in 1898. Mr. Warren H. Manning, one of the most brilliant of the younger generation of landscape gardeners, has made a report on the most eligible site, which is given at length in a recent issue of the Milwaukee *Daily News*.

LIBERTY TREE OF NEWPORT.—The famous Liberty Tree on Thames Street, Newport, Rhode Island, which up to this date has been carefully preserved by its proud possessors, has been transferred by them to the Historical Society of Newport, which body will take effective means for its protection. It was under its shade that the Sons of Liberty met, in 1766, to protest against the Stamp Act, which finally resulted in the National Independence.

INTERNATIONAL HORTICULTURAL EXHIBITION.—Count de Kerchove, President of the Royal Agricultural and Horticultural, and Botanical Society of Ghent, advises us that this society will hold one of those grand horticultural exhibitions for which this city is so famous during the month of April. Exhibits are desired from the United States. Any garden lover from our country should at least take in this exhibition if in Europe during that month.

ELECTRIC TREES IN DAKOTA.—On January 4th, during the worst of the great wind and snowstorm at Huron, the air was heavily laden with electricity. The cottonwood trees in front of the Chicago and Northwestern offices presented a very strange and novel appearance. The trees were buried in snow almost to their tops, but at the end of each twig on every branch in sight was an electrical spark about as large as a common field pea. On taking hold of a twig the spark extinguished, but on withdrawing the hand the spark reappeared.

Dispatcher Wilson, who wore a glove with a hole in the thumb, took hold of a twig, and the spark transferred itself to his thumb and back to the twig when he let go. There was no shock experienced in handling the twigs, and the light did not waver or tremble, but was quite steady.

The trees looked as if a colony of fireflies had settled upon them for the purpose of an illumination.

SITUATIONS WANTED

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENERS:—We shall be glad to furnish names of competent gardeners adapted to large or small places. Gardeners wishing situations should correspond with us. THOMAS MEEHAN & SONS, Nurserymen, Germantown, Philadelphia.

GARDENER—Situation wanted as gardener and florist, by single, middle aged man. Thoroughly experienced in growing flowers, fruits and vegetables. For further information address L. Beiderman, Huntsville, Ala.

HEAD GARDENER—Position wanted on private place by practical Scotchman, 30 years old, married, no children, thorough experience in every branch. Highest recommendations. Address, W. A., care of MEEHANS' MONTHLY.

GARDENER—Situation wanted on private place by Dane, single, 40 years old. Experienced in all branches. Highest references. Address G. R., care of MEEHANS' MONTHLY.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of Rare and Beautiful California Novelties. Many New Begonias, New Cosmos, Rare Cacti, etc. Offered by no others.

Ventura-by-the-Sea, Cal.

New, Rare and Beautiful Plants

Lord Penzance's New Hybrid Sweetbriars, Old Garden Roses, New Roses, Standard Roses, Philadelphia Lemoenei, New Lilacs, Lonicera Hildebrandtii, Spiræa "Anthony Waterer," Tecoma Smithii, etc.

A large collection of Rare Hothouse and Greenhouse Plants, Anthuriums, Alocasias, Orchids, Rare Conifers and other beautiful Evergreens. Magnolias, Japanese Maples, with other choice Trees and Shrubs.

PÆONIES—A large collection of the finest in cultivation. Hardy Perennials, Phioxes, Japanese Iris, Roses, Clematis, etc. New and Standard Fruits, etc.

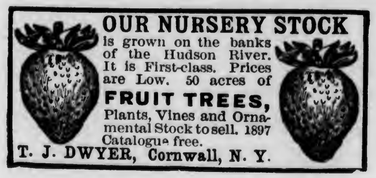
Catalogue on application.

JOHN SAUL, WASHINGTON, D. C.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.

WM. WARNER HARPER, MANAGER



OUR NURSERY STOCK

is grown on the banks of the Hudson River. It is First-class. Prices are Low. 50 acres of

FRUIT TREES,

Plants, Vines and Ornamental Stock to sell. 1897 Catalogue free.

T. J. DWYER, Cornwall, N. Y.

More Potash

in the fertilizers applied on the farm means larger and better yields of crops, permanent improvement of the soil and

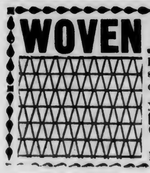
More Money

in the farmer's pocket.

All about Potash—the results of its use by actual experiment on the best farms in the United States—is told in a little book which we publish and will gladly mail free to any farmer in America who will write for it.

GERMAN KALI WORKS,
93 Nassau St., New York.

WOVEN WIRE FENCE



Best on Earth. Horse-high, Bull-strong, Pig and Chicken-tight. With our DUPLEX AUTOMATIC Machine you can make 60 rods a day for **12 to 20 cts. a Rod.** Over 50 styles. Catalogue Free.

KITSELMAN BROS.,
Box 66. Ridgeville, Ind.

Seeds! Seeds!

73d Annual Priced Catalogue of

VEGETABLE, FARM AND FLOWER SEEDS

is now ready and mailed free to all applicants.

BRIDGEMAN'S SEED WAREHOUSE,
37 East 19th St., New York City.

Put up in.....

25-lb. Bags and 100-lb. Kegs

SOLD BY THE SEEDSMEN

For pamphlet of interest, address,

Hammond's Slug Shot,
Fishkill-on-Hudson, N. Y.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

TREES-SHRUBS-ROSES

The largest and most complete collections of **GENERAL NURSERY STOCK** in America, including all desirable **novelties.** Beautiful Catalogue (168 pages—1896 edition) free to customers; to others 10 cents. Every intending buyer should have it.

ELLWANGER & BARRY, Mount Hope Nurseries, Rochester, N.Y.

FLOWER POTS

THE WHILLDIN POTTERY CO.,
713, 715, 717, 719 Wharton Street,
Philadelphia, Pa.

BRANCH WAREHOUSES:
Randolph Avenue and Union St., Jersey City.
Jackson Ave. and Pearson St., Long Island City.

NEW PEACHES

—Triumph, Greensboro, Sneed, Fitzgerald and Bokara No. 3.

NEW CHESTNUTS —Numbo, Paragon, Ridgley. For description of these and other **Fruits, Ornamental Trees, Shrubs, Roses, Plants, Bulbs, Seeds, etc.** Send for our **valuable free catalogue, a book of 168 pages, magazine size.** One of the most, if not the most complete assortments in America. **About a quarter of a million PEACH still unsold.** Many other things in proportion. Seeds, Plants, Bulbs, Small Trees, etc. postpaid. Safe arrival and satisfaction guaranteed, larger by freight or express.

43rd Year. 1000 Acres. 32 Greenhouses.

THE STORRS & HARRISON CO., Box 69 **Painesville, O.**

Fruit Trees and Small Fruits

LORENTZ PEACH

The best for the least money. Biggest stock, completest assortment. Small fruits, fruit trees, roses, vines, shrubs—for the largest growers and the smallest. Crates and baskets. Illustrated descriptive and price catalog free upon request.

REID'S NURSERIES, BRIDGEPORT, OHIO.

ELDORADO BLACKBERRY

BUY NO INCUBATOR

and pay for it before giving it a trial.

The firm who is afraid to let you try their incubator before buying it, has no faith in their machine. We will sell you ours **ON TRIAL. NOT A CENT until tried, and a child can run it with 5 minutes attention a day.**

We won **FIRST PRIZE WORLD'S FAIR** and will win you for a steady customer if you will only buy ours on trial. **Our large catalogue will cost you 5 cents and give you $100 worth of practical information on poultry and incubators and the money there is in the business.** Plans for Brooders, Houses, etc., 25

N. B. Send us the names of three persons interested in poultry and 25 cents and we will send you "The Bicycle: Its Care and Repair," a book of 180 subjects and 80 illustrations, worth $5.00 to any bicycle rider.

VON CULIN INCUBATOR CO.,
Box 180. Delaware City, Del.

"UP-TO-DATE" SPRAY PUMPS

ALL BRASS.

$17.00 outfit for $6.00. Express paid. Will spray a 10-acre orchard per day. 75,000 in use. *Satisfaction guaranteed or money refunded.* Ill'd Catalogue and Treatise on Spraying free. Ag'ts wanted. Exclusive territory given. Rapid sellers. Many of our agents are making from $10 to $15 per day.

P. C. LEWIS MFG. CO., Box 127 Catskill, N. Y.

TREES

and Hardy Ornaments of every variety and size. Descriptive and finely illustrated catalogue, containing valuable hints on tree planting, mailed for 6c. in stamps.

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers — **Germantown, Philad'a**

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HARDY FERNS AND FLOWERS

You will find over 40 varieties of hardy
FERNS in my Catalogue, **beautiful,** and **easily grown.**
CYPRIPEDIUMS—white, purple and yellow.
TRILLIUMS—large pure white, purple, etc.
WATER PLANTS. Sweet Water Lillies, etc.
WILD FLOWERS and bedding plants.
IRIS—in great variety, with beautiful markings.
SHRUBS, ROSES, etc.

Send for Descriptive Illustrated Catalogue.

EDWARD GILLETT, Southwick, Mass.

BLOODGOOD NURSERIES

FLUSHING, N. Y.

TREES- Fruit and Ornamental, Deciduous and Evergreen

Shrubs, Including Rhododendrons and Azaleas, Vines, Roses, etc.

Shade Trees of most sorts up to 3½ in. diameter. Fine stock. Low prices.

Address, KEENE & FOULK.

A BICYCLE FREE

To any person who will send in $150.00 of subscriptions at regular rates to Romance, Current Literature, or Short Stories, between the 1st day of October, 1896, and the 1st day of May, 1897, we will give, free of cost, one $100 BICYCLE of STANDARD make, lady's or gentleman's model. Full particulars on application by enclosing 10 cents for samples and instruction. - - - - - - - - -

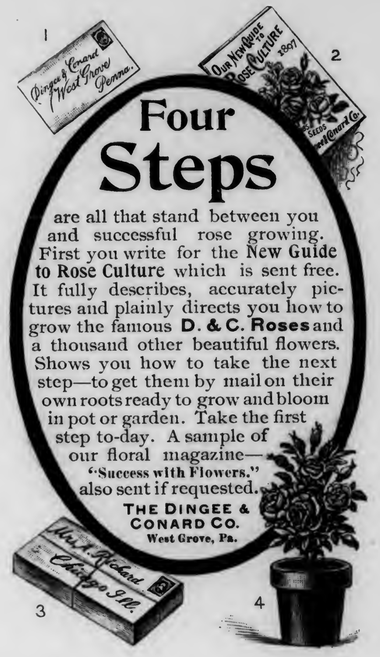
CURRENT LITERATURE is a magazine of information. At once the largest magazine published, it contains an endless amount of interesting material—the cream of the thought and intellectual development of the day. 25 cents a number—$3.00 a year.

SHORT STORIES is a magazine of short tales—the original and best of story magazines—handsomely illustrated by the ablest illustrators of the day. The new department of anecdotes offers a monthly prize for the best one sent in. 25 cents a number—$2.50 a year.

ROMANCE portrays the romantic side of modern life, its arts, its celebrities, its wonders, its peculiarities, its varied developments. Light yet serious. Cheap yet respectable. 10 cents a number—$1.00 a year.

For list of prizes see advertising pages each month.

THE CURRENT LITERATURE PUBLISHING CO.
52-54 Lafayette Place, New York



Under New Management

ROMANCE

20 ROMANTIC STORIES FOR 10c.

More reading matter than any other magazine in the world.

A LIBRARY IN ITSELF.

Romances of Love and War, Romances of Real Life, Stories of Gallantry, Tales of Adventure, Stories of the Boudoir.

Best known authors and unknown authors.

SUBSCRIPTIONS $1.00 A YEAR
OR,
Romance and any $1.00 a year Magazine, $1.50.
EXTRAORDINARY PRICES OFFERS.

Send 10c. for sample copy and particulars.

Gilson Willets
Editor and Publisher
1440 Broadway, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

Southern Florist and Gardener.

THE ONLY FLORAL MAGAZINE FOR THE SOUTHERN CLIMATE.

ISSUED ON THE 1ST OF EACH MONTH.

$1.00 per Year, Ten cents additional to our handsome floral premiums, which we give free of charge to each new subscriber.

Liberal Cash Commissions to Agents.
Advertising Rates on Application.

PUBLISHED BY

The Southern Florist and Gardener Pub. Co.

ELIZABETH FRY, Editor and M'g'r. 336 W. GREEN ST., LOUISVILLE, KY.

SAMPLE COPY FREE.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS. L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

THE FAMILY MONEY MAKER!

Worth $100.00 a year and more to all who own land, a garden, orchard, or conservatory; covers, in plain language, by practical men, the care and cultivation of flowers, fruits, plants, trees, shrubs, bulbs, etc., etc., and tells how to make home grounds attractive.

3 AMERICAN GARDENING 10

America's brightest and most reliable gardening and family paper. Established 50 years. Illus. Weekly. $1.00 a year.

WITH HANDSOME PREMIUM

To introduce it to new readers we will send AMERICAN GARDENING three months (12 numbers) to any address on receipt of Ten Cents, in stamps or coin. Sample free.

AMERICAN GARDENING, P. O. Box 1697, N.Y.

PRACTICAL. POPULAR. SCIENTIFICALLY EXACT.

VOL. IX. NO. 410

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

JANUARY 1, 1896

Indispensable to all who love gardens or the literature of gardens; to all who own country places or take pleasure in rural scenery; to all who desire a broader knowledge of trees, shrubs, fruits and flowers. GARDEN AND FOREST stands for the protection of our forests, the preservation of natural beauty, for a purer taste in the design and decoration of public and private grounds, and is universally pronounced the best horticultural journal ever published for Americans.

"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Winning, delightful and accurate."—*N. Y. Tribune.*
"A compendium of new information."—*N. Y. Herald.*

BEAUTIFULLY ILLUSTRATED. WEEKLY. $4.00 A YEAR.

Specimen copy free on application.

Garden and Forest Publishing Co. Tribune Building, NEW YORK

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

Manufacturers of Greenhouse Heating and Ventilating Apparatus

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUE

233 MERCER STREET, NEW YORK CITY

CAMPBELL'S EARLY GRAPE

One Hundred Days Earlier

BURPEE'S FARM ANNUAL for 1897

TELLS the PLAIN TRUTH About The BEST SEEDS that Grow! With hundreds of illustrations, many of them new and beautiful, painted from nature, it is "The Leading American Seed Catalogue" and will be mailed FREE to all.

W. ATLEE BURPEE & CO., PHILADELPHIA, PA.

"JUST RIGHT!"

The Verdict of Users of the New

No. 6 and No. 7

IMPROVED MODELS OF THE

Remington

Standard Typewriter.

A maximum of Durability, Convenience and Economy, with a minimum of machinery.

SEND FOR CIRCULARS

WYCKOFF, SEAMANS & BENEDICT,

109 S. Ninth St., Philada. (Continental Hotel)

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

Southern Florist and Gardener.

THE ONLY FLORAL MAGAZINE FOR THE SOUTHERN CLIMATE.

ISSUED ON THE 1ST OF EACH MONTH.

$1.00 per Year, Ten cents additional to our handsome floral premiums, which we give free of charge to each new subscriber.

Liberal Cash Commissions to Agents.
Advertising Rates on Application.

PUBLISHED BY

The Southern Florist and Gardener Pub. Co.

ELIZABETH FRY, Editor and M'g'r. 336 W. GREEN ST., LOUISVILLE, KY.

SAMPLE COPY FREE.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS. L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

THE FAMILY MONEY MAKER!

Worth $100.00 a year and more to all who own land, a garden, orchard, or conservatory; covers, in plain language, by practical men, the care and cultivation of flowers, fruits, plants, trees, shrubs, bulbs, etc., etc., and tells how to make home grounds attractive.

3 AMERICAN GARDENING 10

America's brightest and most reliable gardening and family paper Established 50 years. Illus. Weekly. $1.00 a year.

WITH HANDSOME PREMIUM

To introduce it to new readers we will send AMERICAN GARDENING three months (12 numbers) to any address on receipt of Ten Cents, in stamps or coin. Sample free.

AMERICAN GARDENING, P. O. Box 1697, N.Y.

PRACTICAL. POPULAR. SCIENTIFICALLY EXACT.

Indispensable to all who love gardens or the literature of gardens; to all who own country places or take pleasure in rural scenery; to all who desire a broader knowledge of trees, shrubs, fruits and flowers. GARDEN AND FOREST stands for the protection of our forests, the preservation of natural beauty, for a purer taste in the design and decoration of public and private grounds, and is universally pronounced the best horticultural journal ever published for Americans.

"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Winning, delightful and accurate."—*N. Y. Tribune.*
"A compendium of new information."—*N. Y. Herald.*

BEAUTIFULLY ILLUSTRATED. WEEKLY. $4.00 A YEAR.

Specimen copy free on application.

Garden and Forest Publishing Co. Tribune Building, NEW YORK

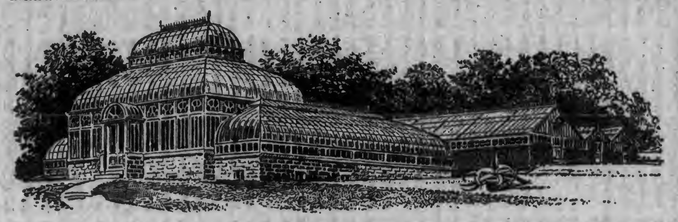
WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

CAMPBELL'S EARLY *Our Marvelous New* GRAPE

Best and most valuable. Highest commendation from highest authorities. Hardy, healthy, vigorous, very productive. **Early or late.** Largest clusters, finest quality, not foxy. **Seeds need not be swallowed.** None genuine without our seals. We guarantee safe arrival by mail. Largest stock of Grape Vines in the World. Small Fruits. Introducer of unrivalled **Red Jacket Gooseberry** and **Fay Currant.**

CATALOGUE FREE. **GEO. S. JOSSELYN, FREDONIA, NEW YORK.**

BURPEE'S FARM ANNUAL for 1897

TELLS the PLAIN TRUTH About

The BEST SEEDS that Grow! With hundreds of illustrations, remarkable New Novelties painted from nature, it is "The Leading American Seed Catalogue." Mailed FREE.

W. ATLEE BURPEE & CO., PHILADELPHIA, PA.

"JUST RIGHT!"

The Verdict of Users of the New

No. 6 and **No. 7**

IMPROVED MODELS OF THE

Remington

A maximum of Durability, Convenience and Economy, with a minimum of machinery.

Standard Typewriter.

SEND FOR CIRCULARS.

WYCKOFF, SEAMANS & BENEDICT,

105 S. Ninth St., Philada. (Continental Hotel.)

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

INTENTIONAL SECOND EXPOSURE

LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS

STEAM AND HOT WATER HEATING ENGINEERS
Plans and Estimates furnished on application

Largest Builders of Greenhouse Structures. Six Highest Awards at the World's Fair
Send four cents postage for illustrated catalogue

LORD & BURNHAM CO.

ARCHITECTURAL OFFICE, 160 FIFTH AVE., COR. 21st STREET, NEW YORK.
Factory: Irvington-on-Hudson, New York Mention Paper

FLOWER POTS—STANDARD

You will make a mistake if you place your order for Flower Pots without first receiving our estimate or the same. Our plant is now the largest in the WORLD.

STOCK UNLIMITED. GOODS UNEQUALED

A. H. HEWS & CO., North Cambridge, Mass.

LANDSCAPE AND SANITARY ENGINEERING

Sub-division and treatment of property for towns, parks and villa sites. Designs for grading, road building, and other improvements. Public and domestic water supply. Sewage disposal for houses and towns. Reports, estimates, specifications and superintendence.

TOPOGRAPHICAL ENGINEERING AND SURVEYING — HAROLD VAN DUZEE — PHILADELPHIA, PA. 427 WALNUT ST.

EDWARD CAMPBELL
LANDSCAPE ARCHITECT AND ENGINEER

ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. Fine Crushed Stone for Walks and Carriage Drives.

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS. The finest general assortment of Hardy Ornamental Plants in America. Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.
THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

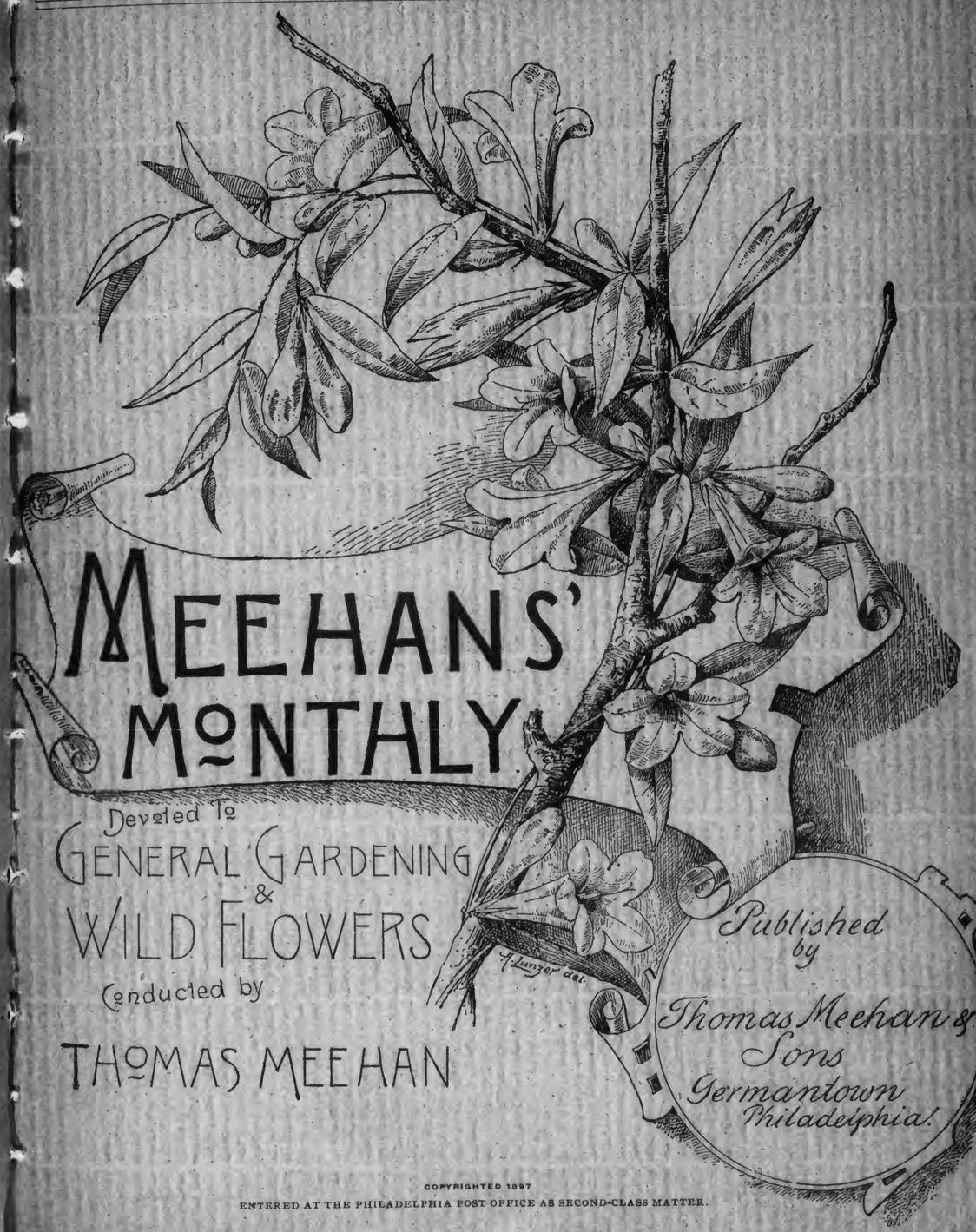
We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without put y. Latest methods of Ventilation, Steam and Hot-Water Heating. Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. ☞ Don't fail to get our Plans and Prices.

PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

WHEN WRITING TO ADVERTISERS, PLEASE MENTION MEEHANS' MONTHLY.

VOL. VII MARCH, 1897 No. 3

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



MEEHANS' MONTHLY

Devoted To
GENERAL GARDENING
&
WILD FLOWERS
Conducted by
THOMAS MEEHAN

Published by
Thomas Meehan & Sons
Germantown
Philadelphia

COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

Meehans' Monthly

PUBLISHED MONTHLY BY

THOMAS MEEHAN & SONS,
Germantown, Phila.

Subscription Price $2.00 per year.

$1.00 for Six Months. Back Numbers 20 cts. Each.
Two Subscriptions for $3.50 per Year.

ADVERTISING RATES ON APPLICATION

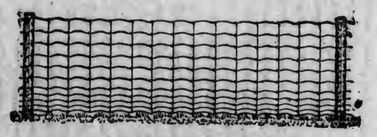
Forms close on the 20th of each Month, preceding date of issue.

Address all Correspondence relating both to Editorial and Advertising matter, to

THOMAS MEEHAN & SONS, Publishers
Germantown, Phila., Pa.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.
WM. WARNER HARPER, MANAGER



STRONG ENDORSEMENT

"In the spring of '88 I put up 600 rods. I have never had to repair it from that day to this. In '90 I put up about 300 rods, with equally good results. There is no reason why a **Page** fence will not stand 20 years without any expense for repairs."
WILL W. SHEPARD.
Honeoye Falls, N. Y. (in letter Jan. 18, '97) to
PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

The choicest **MAGNOLIAS, JAPANESE MAPLES** and other **TREES and SHRUBS** accurately described in our **New Catalogue.** Profusely illustrated, including three lithographs. Contains prices of large and small trees, specimens for immediate effect; and special prices for quantities. **A Guide to Tree Planting,** the most complete catalogue of its kind ever published. 6 cents in stamps.
THOS. MEEHAN & SONS, GERMANTOWN, Philadelphia.

NOVELTIES IN PLANTS, FRUITS, ETC.
A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

MY catalogue of **STRAWBERRY PLANTS** 90 varieties. E. J. HULL, Olyphant, Pa. **FREE**

A GOOD RECORD.

A 60-foot row of the Margaret strawberry, on the grounds of E. C. Davis, of Northampton, Mass., fruited 38 days in 1896. It yielded immensely, and berries over two inches in diameter were picked from it on 34 days. The largest six averaged 3.16 inches in length. Ten berries were taken from one stem that measured from 2⅛ to 3¼ inches. The average length was 2½ inches. The same stem bore eight others smaller.

The grower was offered $5.00 for five quarts of the Margaret on July 4, 1895—a week after picking for market had closed.

It is a seedling of the Crawford, originated by John F. Beaver, of Ohio, the most successful amateur grower in the State.

The plant is an ideal one; blossom perfect; fruit immense, nearly always of regular form, conical, often necked, approaching a lemon in shape and size; dark, glossy red, firm and delicious.

Mr. Davis is a very successful grower of nearly 40 years' experience, and has fruited a very large number of varieties, but none ever equaled the Margaret.

Dozen, by mail, $2.00; 100, $10.00. Strong plants, liberal count, well packed. 30 years' experience. Catalogue free.

M. CRAWFORD, Cuyahoga Falls, O.

OCEAN CITY Strawberry
Finest flavor; large and solid. Bear enormously. **Donald's Elmira Asparagus Roots;** a new production of rare merit. **Greensboro Peach, Japan Plums, Small Fruits, Tenn. Peach Seed.** Catalogue FREE.
HARRISON'S NURSERIES, BERLIN, MD.

OUR 1897 CATALOGUE of **FRUIT TREES** Plants, Vines & Ornamental Stock. Standard Varieties & Novelties. Prices Low. Stock first-class Mailed Free. **T. J. DWYER,** Orange Co. Nurseries, Cornwall, N. Y.

Wood Ashes

Direct from Canada, collected by ourselves in the hardwood districts, *tested,* and shipped under **our own guarantee** of strength and purity. Buy ashes or other fertilizers only of responsible concerns. Our twenty-five years in business, ample capital and facilities, combine to make our guarantee of value.

BONE AND WOOD-ASH FERTILIZER, $25 per ton. An excellent combination. Write for particulars.

BOWKER FERTILIZER COMPANY, 43 CHATHAM ST., BOSTON.
Manufacturers of Special and General Fertilizers for all crops and all soils, Bowker's Lawn Dressing. Everything in the fertilizer line.

ŒNOTHERA SERRULATA

LIBRARY
N.C. STATE
COLLEGE

ŒNOTHERA SERRULATA.

SAW-EDGED EVENING PRIMROSE.

NATURAL ORDER, ONAGRACEÆ.

ŒNOTHERA SERRULATA, Nuttall.—Stem low, slender, and suffruticose, minutely pubescent, as well as the under side of the leaves and capsules; leaves oblong-linear, irregularly serrulate; flowers distant, axillary; calyx sessile, angular, funnel-form; capsule prismatic, slender; petals roundish, entire; stamina and style very short; stigma undivided, four-toothed. (Nuttall's *Genera of North American Plants*. See also Coulter's *Flora of Colorado*, Gray's *Manual of the Botany of the Northern United States*, and Torrey and Gray's *Flora of North America*.)

The author's first acquaintance with *Œnothera serrulata* was many years ago on a three days' trip by wagon from Colorado Springs to Denver, in Colorado. This was before railroads had invaded the territory, and these wagon rides gave admirable opportunities for the study of natural history, for the wagon was rather the ornamental companion than of any especial use in furnishing "rides." The plant, in that dry, gravelly soil, was not more than six inches tall, except in rare instances, and struck us especially as an exception to most Evening Primroses in blooming during the day instead of waiting to bloom till after sundown, as a well-ordered Evening Primrose might be expected to do. In its whole general habit and appearance it seemed so unlike the usual forms of *Œnothera*, many of which our party had collected in our Rocky Mountain exploration, that there was some doubt whether it was not an *Epilobium* rather than *Œnothera*. There is, however, something in color to guide the botanist in his determinations, though that is not well-recognized under strict botanical rules. But who ever heard of a yellow *Epilobium* in the Rocky Mountains,—or indeed anywhere, other than a solitary, western-coast species,—and could this possibly be another special exception in a new territory? But the tube of the calyx was produced beyond the ovary, which ought not to be the case with an *Epilobium*,—while the head of hair, or coma, which is especially characteristic of the seeds of *Epilobium*, was wanting. We carried no books with us in our wanderings in those days. It was finally placed away as an *Epilobium* sp. with some misgiving, but proved to be *Œ. serrulata*, on our return. From plants raised from seeds gathered on that expedition, the present drawing was made. The plant has a somewhat shrubby habit, dying back; somewhat, annually; but always keeping low and dwarf. The specimen is, therefore, rather more vigorous than those found in the wild state. It was near this spot, some fifty years before, that the specimens were obtained from which Nuttall first described it,—giving it the name *serrulata* from its finely—saw-toothed leaves. Since then it has been found in other localities. James and Fremont found it in other parts on the lines of the Red and Platte Rivers,—Marcy, in the expedition of 1854, found it abundant on the upper tributaries of the Red River. It has since been noted as growing in Minnesota, in the region of the Saskatchawan,—and on the southern line of its geographical circle, in Arkansas and Texas. It is, however, variable in some of its characters; and this has led some botanists to consider some of the forms as distinct species.

In studying the genus *Œnothera*, considerable value in classification is derived from the form of the stigma. Some have the stigma divided into four exact parts—cruciate. The common Evening Primrose, *Œnothera biennis*, is a good illustration of this section. Another has the stigma rounded in outline, with the bare indication that it might be four-lobed. Another has the stigma with four very narrow or roundish lobes. Another with four very short lobes. One section has the stigma so thoroughly rounded that no lobes are visible; while another has the stigma club-shaped. These will be subdivided according to other characteristics. But *Œnothera serrulata* stands alone in the peculiarity of a disc-formed stigma with crenulate edges. It is so distinct, in this and some other characteristics, from its neighbors, that Spach ventured to make for it a new genus—which he named *Calylophis*, apparently from the crested condition of the sepals as compared with other species, as shown in

COLOR PLATE

ŒNOTHERA SERRULATA.

SAW-EDGED EVENING PRIMROSE.

NATURAL ORDER, ONAGRACEÆ.

ŒNOTHERA SERRULATA, Nuttall.—Stem low, slender, and suffruticose, minutely pubescent, as well as the under side of the leaves and capsules; leaves oblong-linear, irregularly serrulate; flowers distant, axillary; calyx sessile, angular, funnel-form; capsule prismatic, slender; petals roundish, entire; stamina and style very short; stigma undivided, four-toothed. (Nuttall's *Genera of North American Plants*. See also Coulter's *Flora of Colorado*, Gray's *Manual of the Botany of the Northern United States*, and Torrey and Gray's *Flora of North America*.)

The author's first acquaintance with *Œnothera serrulata* was many years ago on a three days' trip by wagon from Colorado Springs to Denver, in Colorado. This was before railroads had invaded the territory, and these wagon rides gave admirable opportunities for the study of natural history, for the wagon was rather the ornamental companion than of any especial use in furnishing "rides." The plant, in that dry, gravelly soil, was not more than six inches tall, except in rare instances, and struck us especially as an exception to most Evening Primroses in blooming during the day instead of waiting to bloom till after sundown, as a well-ordered Evening Primrose might be expected to do. In its whole general habit and appearance it seemed so unlike the usual forms of *Œnothera*, many of which our party had collected in our Rocky Mountain exploration, that there was some doubt whether it was not an *Epilobium* rather than *Œnothera*. There is, however, something in color to guide the botanist in his determinations, though that is not well-recognized under strict botanical rules. But who ever heard of a yellow *Epilobium* in the Rocky Mountains,—or indeed anywhere, other than a solitary, western-coast species,—and could this possibly be another special exception in a new territory? But the tube of the calyx was produced beyond the ovary, which ought not to be the case with an *Epilobium*,—while the head of hair, or coma, which is especially characteristic of the seeds of *Epilobium*, was wanting. We carried no books with us in our wanderings in those days. It was finally placed away as an *Epilobium* sp. with some misgiving, but proved to be *Œ. serrulata*, on our return. From plants raised from seeds gathered on that expedition, the present drawing was made. The plant has a somewhat shrubby habit, dying back; somewhat, annually; but always keeping low and dwarf. The specimen is, therefore, rather more vigorous than those found in the wild state. It was near this spot, some fifty years before, that the specimens were obtained from which Nuttall first described it,—giving it the name *serrulata* from its finely—saw-toothed leaves. Since then it has been found in other localities. James and Fremont found it in other parts on the lines of the Red and Platte Rivers,—Marcy, in the expedition of 1854, found it abundant on the upper tributaries of the Red River. It has since been noted as growing in Minnesota, in the region of the Saskatchawan,—and on the southern line of its geographical circle, in Arkansas and Texas. It is, however, variable in some of its characters; and this has led some botanists to consider some of the forms as distinct species.

In studying the genus *Œnothera*, considerable value in classification is derived from the form of the stigma. Some have the stigma divided into four exact parts—cruciate. The common Evening Primrose, *Œnothera biennis*, is a good illustration of this section. Another has the stigma rounded in outline, with the bare indication that it might be four-lobed. Another has the stigma with four very narrow or roundish lobes. Another with four very short lobes. One section has the stigma so thoroughly rounded that no lobes are visible; while another has the stigma club-shaped. These will be subdivided according to other characteristics. But *Œnothera serrulata* stands alone in the peculiarity of a disc-formed stigma with crenulate edges. It is so distinct, in this and some other characteristics, from its neighbors, that Spach ventured to make for it a new genus—which he named *Calylophis*, apparently from the crested condition of the sepals as compared with other species, as shown in

COLOR PLATE
INTENTIONAL SECOND EXPOSURE

our plate, Fig. 2. The distinction is not regarded as of generic value by American botanists; but the name is retained, denoting a sub-genus.

Very much of the poetry and sentiment begotten by the English Primroses has been transferred by American authors to various species of *Œnothera*. They are all Evening Primroses; and what has been done for the true Evening Primroses, in this line, has been rather the work of other authors than our own. Evan Evans, the Welsh poet, praises the flowers and remarks:

"Œnothera sheaths in many a fold,
Of primrose scent and hue her fainter gold,
Nor yet unbinds the firmly clasping zone,
Till eve's mild lustre mingles with her own."

So far as the resemblance of the flowers of some œnotheras to the famous primrose of the poets is concerned,—the primrose of which a good, but somewhat obscure, poet, William Peters, sings in "The Birthday Wreath:"

"And first—though oft alas! condemned
Like merit, to the shade—
The Primrose meek, with dews begem'd
Shall sparkle in the braid."

—referring to shady places in woods where the English Primrose is found, and the little globules of dew which seem to particularly love to form on its corolla—the species of *Œnothera* now illustrated affords more resemblance in the shape and size of the flowers to this primrose than do many others of our species. It is still an open question whether the name was transferred from the European Primrose to *Œnothera biennis* more from the similarity of the odor than from any floral resemblance. A polite English writer, Friend, is, however, of a different opinion. "It is not to be wondered at," he says "that so many night-blooming flowers have had the term 'evening' bestowed on them, for, when we find a flower reversing the natural order of things and turning night into day, it is but reasonable that we should take special note of that flower, and mark it as one given to midnight revelry. Our first flower, of this class, is the Evening Primrose, the latter portion of the name being derived from the pale, primrose tint of the blossoms,—the former from its beginning to wake up just as other flowers are going to sleep. Here and there a blossom may sometimes be seen expanded in the day time, but the majority of flowers do not open till six or seven o'clock in the evening, and then they are slightly fragrant, a beautiful characteristic of many night-blooming flowers. It would seem that, as they open during a period when beauty of appearance would be disregarded, on account of darkness, they make up for the disadvantage by the diffusion of the choicest odors."

The reason why flowers open at night has never been made clear by investigators, and the fact that some species, like the *Œnothera serrulata*, *Œnothera pumila* and some others, open during the day and not during the night, makes the subject one of exceeding difficulty. Not only are there flowers which open day or night respectively, but some which flower in the morning or at noon, or at various hours during the day or night. Some are known to open only at midnight; and again is the difficulty suggested by the author above quoted, that among the same species are plants whereon "here and there a blossom may be seen expanded in the daytime" with no explanation of the vagary being at hand.

Recently, a special study has been made, by a botanist in France, of the sudden expansion of the petals of the Evening Primrose at about sundown. In the report of his observations, it is concluded that the closed petals absorb so much heat during the day that by evening the rarified air acts mechanically, pressing apart the petals by its intensity. But the fact is, that a large number of plants expand their flowers suddenly that are not under these conditions. It is more than probable that species like the one now considered would be found that expand their petals just as suddenly. Being a day-opener, the reasoning of the French observer could not apply. It seems a mere guess.

Much has been learned about the behavior of plants, but much yet remains to be developed. These studies add a great charm to the mere love of flowers. It may be noted that the Evening Primrose family is represented mainly on the American Continent, our common Evening Primrose being simply naturalized in the Old World. About one hundred species have been described, of which some seventy belong to the United States.

EXPLANATION OF THE PLATE.—Branches in fruit and flower. 2. Showing the crested character of the sepals.

WILD FLOWERS AND NATURE.

THE MARCH WIND.

Up from the sea the wild north wind is blowing
Under the sky's gray arch;
Smiling, I watch the shaken elm-boughs, knowing
It is the wind of March.

The stormy farewell of a passing season
Leaving, however rude
Or sad in painful recollection, reason
For reverent gratitude. —WHITTIER.

BOTANIZING IN THE DELAWARE NARROWS.—If you recall to mind the twenty-ninth of June, you will remember it was one of the most perfect days benignant nature ever swung our sphere through. It was my good fortune to spend the latter half of it in pleasant company at the Narrows of the Delaware, driving just under the brow of the beetling palisades. The wall of rock, though but a few miles in extent, seemed to us as fine as any part of the Hudson shore. It should become the property of the Nation as the cliffs along her sister river bid fair soon to be.

The flora is a rare treat to the botanist, especially the frondiose botanist. *Woodsia* grows in dense mats all along the way. *Cystopteris bulbifera* is found at every pace in light green clumps, and *Asplenium Trichomanes* where the rocks are wet and mossy. In a cottage door-yard we saw, we came upon the rare Ostrich Fern, *Onoclea Struthiopteris*, the fertile fronds just coming up and, indeed, bearing a resemblance to ostrich feathers. We were directed to its native locality. *Cheilanthes vestita* is said to grow here, but we did not meet with it as our time for search was limited. The rock ledges are on the west or right bank of the river, and many of them are protected from the sun much of the day. Additional favor is had from abundant trickles, which keep the rocks damp and richly green. The Harebell, with lots of *round* and toothed root leaves, and Rock Cress were very abundant at the time of our visit, as were also blooming Spikenard, Flowering-Raspberry, hydrangea, and glorious, stately white anemones. Ripe, scarlet berries from a honeysuckle shone from a low, natural wall. The *Hypericum Ascyron* was opening its first great yellow flowers by the canal bank. Red-berried Elder and Canada Violet are found here in early May, but were of course out of season by the end of June. What particularly rejoiced our eyes were large, thrifty colonies of Alum Root growing serenely on jutting ledges away in mid-air; and the Virginia Creeper throwing its loose ends down in long, swaying pennants, with tender green tips, from its precarious station on the face of the rock.

The rare desirable was unattainable, but we could plainly see what we took to be it, a hundred feet above us, an effect of glaucous, gray-green color clustering about the springs which oozed from between the laminæ of the cliff. I speak of *Sedum Rhodiola*. It is a plant with a history,—left by the ancient glaciers as they sank from that level, its progeny flourishing till now, and fortunately inaccessible to the majority of collectors. "It is found," says Gray, "throughout Arctic America, extending southward to the coast of Maine, and *cliffs of the Delaware River;* also in the western mountains."

On driving up the long, circuitous hill that bounds the southern limit of the cliffs, we were surprised to find that a cyclone had passed through the forest with great havoc, as though a multitude of Titanic hands had reached down from the furious, passing cloud, and had grasped the strong trunks low down, and with irresistible, tortuous force, wrenched the boles from their anchoring roots, laying the beautiful tops on the earth to wither.

After the long climb we reached a plateau of barren ground where strict, trim cedars held the land,—the land that slender knot-weed grows on, Milkwort, Wretched Aster, Pimpinella, and lots of golden-rod.

Here we could look out and over the rounded river hills of Jersey, lying in the late June sunlight,—gentle hills, some forested and some in grain and corn and grass, and some for pasture.

The world that evening seemed under the spell of passing June, quite in the spirit of lending itself to pastorals and idyls, and we vowed the place was better than any book, as we rode stationward, stopping by a cold spring, gathering a few early berries and ending our jaunt at the ample inn among the blossoming lindens of the town.

E. NEWLIN WILLIAMS.

PINUS INSIGNIS.—In your December number, in "Notes on Golden Gate Park," you speak of the *Pinus insignis* as a beautiful pine which will soon cease to exist in a wild form anywhere. Its native home, like several other of the California conifers, is restricted, being found only around Monterey. But little depredation was found had been made on it, on my last visit there; and I think it will be a great many years before it will be destroyed in its native haunt. No other conifer has been so extensively planted on the Pacific Coast, from San Diego to Sacramento. South of Golden Gate Park, there are thousands of them growing on Sutro Heights, having been planted by that great philanthropist, Mr. Adolph Sutro. It is one of the easiest of the conifers to grow, standing more illtreatment than even the Scotch Pine, and is a very rapid grower. I have begun taking them out of the seed bed when only eighteen days above ground, some of them still having the seed on them,—dibbling them into four-feet beds and shading with lath frames. They were transplanted to nursery rows when six months old, and at the age of one year they were nice, stocky, twice-transplanted trees, twelve to fifteen inches high. How different from the native conifers of the East and Europe. It requires three very favorable years for them to grow that high, even when they are crowded in the seed bed. The *Pinis insignis*, or Monterey Pine, as it is called on the Coast, makes from two to three *new* growths every year. A person not acquainted with them or their manner of growth always overestimates their age. In the East, one can tell the age of a pine tree very accurately by the whorl of branches; but it cannot be done with this tree,—trees at Jeann C. Carr's place, at Pasadena, showing thirty-nine whorls when the trees were not over fourteen years old. I have measured some on Senator Stanford's grounds, at Palo Alto, that were over *ten feet* between the whorls. Trees eight years planted were from thirty-five to fifty feet high, being out-topped only by the fast-growing *Eucalyptus Globulus*, or Blue Gum; but they had outgrown the other varieties of *Eucalyptus*. They rarely attain the age of thirty years, north of Sacramento. General Bidwell says they rarely survive twenty years at Chico, usually beginning to fail when they are about fifty feet high, with a diameter of fifteen to eighteen inches.

THOMAS H. DOUGLAS.

Waukegan, Ill.

A CREAM-COLORED SKUNK CABBAGE.—The well-known Skunk Cabbage, botanically *Symplocarpus fœtidus*, is noted for the great variety of shades and tints which the flowers present. One may get a bouquet of fine varieties from the flowers, if one can bear a fetid smell. Last year, Mr. C. F. Saunders sent us a specimen which was cream-colored. This is very rare, notwithstanding the great range of variety in color. It may, however, be noted that what are called albinos may be occasionally found in any class of flowers. It may be further noted that the disagreeable odor of the flower comes from the plant juices, and not from the flower itself. It is only after they are cut that they become disagreeable. If one could find a board in the swamp, and could kneel down so as to get at the flowers before being cut from the parent plant, the odor would be found rather agreeable than otherwise.

DOUBLE GRAPES.—I wish to call your attention to a most remarkable freak of nature that came under my notice a few weeks ago. A gentleman living in Oakland sent me a bottle of alcohol in which were preserved several Flame-Tokay grapes, inside of each of which there was a perfect, smaller grape. Outside of these, imbedded in the pulp of the outer grape, there were a number of perfect seeds. The inside grapes had no seeds, but a smooth skin, and much resembled, when taken out, a green gooseberry. The inner berry had no direct connection with the stem, but was connected at that point with the outer grape.

In his note, the statement was made that the berries on one section of a large cluster were all of this character.

Palo Alto, Cal. EMORY E. SMITH.

THE PINE KNOT.—Near Clinton, Ark., there stands a large White Oak, which, with the top of a pine tree (*Pinus rigida*) firmly imbedded in its trunk, forms a natural curiosity deserving mention. This oak, as can be seen in the accompanying cut, is nearly two and a half feet in diameter; is in perfect health, and, judging from similar trees cut in this section, is at least 200 years old. "The Pine Knot," as it is called, is of course much older, as the pine had fallen when the oak was but a sapling. One limb of the pine formed a crotch which bore so closely upon the oak as to push it out of its perpendicular position, and "as the twig is bent the tree is inclined."

THE PINE KNOT.

This limb projects on the opposite side of the oak from that seen in the picture, and at such an angle as to appear as coming from the heart of the oak, and is so perfectly encased as to not leave a scar. So the oak could not have been large.

The pine tree, having grown on higher ground, was held in position after falling, by a sort of natural terrace, so that the top of the body rested against the oak eight feet above the ground, and the oak grew around it and encased it so completely that now it will bear up as many people as can find footing—a dozen or more.

When the body of the pine rotted and burned away by forest fires, the top remained, entirely suspended, the lowest point being a limb which extends to within 18 inches of the earth.

The oak has "stooled out," so that four feet or more of the pine body is entirely encased, and you can see a limb, (with lady's hat on,) which looks to be a dead limb of the oak. The pine is quite sound and "rings" like earthenware when pounded upon.

The heart wood of these pines, after the sap has rotted away, or been burned by forest fires, is so full of resin as to remain lying on the ground in perfect preservation for ages. These "pine knots" form a marketable commodity, usually selling for $1.00 per wagon load, and are mainly used for kindling fires, for heating furnaces same as soft coal, and produce about as much smoke and soot.

It is strange that the forest fires will burn all

The world that evening seemed under the spell of passing June, quite in the spirit of lending itself to pastorals and idyls, and we vowed the place was better than any book, as we rode stationward, stopping by a cold spring, gathering a few early berries and ending our jaunt at the ample inn among the blossoming lindens of the town.

E. NEWLIN WILLIAMS.

PINUS INSIGNIS.—In your December number, in "Notes on Golden Gate Park," you speak of the *Pinus insignis* as a beautiful pine which will soon cease to exist in a wild form anywhere. Its native home, like several other of the California conifers, is restricted, being found only around Monterey. But little depredation was found had been made on it, on my last visit there; and I think it will be a great many years before it will be destroyed in its native haunt. No other conifer has been so extensively planted on the Pacific Coast, from San Diego to Sacramento. South of Golden Gate Park, there are thousands of them growing on Sutro Heights, having been planted by that great philanthropist, Mr. Adolph Sutro. It is one of the easiest of the conifers to grow, standing more illtreatment than even the Scotch Pine, and is a very rapid grower. I have begun taking them out of the seed bed when only eighteen days above ground, some of them still having the seed on them,—dibbling them into four-feet beds and shading with lath frames. They were transplanted to nursery rows when six months old, and at the age of one year they were nice, stocky, twice-transplanted trees, twelve to fifteen inches high. How different from the native conifers of the East and Europe. It requires three very favorable years for them to grow that high, even when they are crowded in the seed bed. The *Pinis insignis*, or Monterey Pine, as it is called on the Coast, makes from two to three *new* growths every year A person not acquainted with them or their manner of growth always overestimates their age. In the East, one can tell the age of a pine tree very accurately by the whorl of branches; but it cannot be done with this tree,—trees at Jeann C. Carr's place, at Pasadena, showing thirty-nine whorls when the trees were not over fourteen years old. I have measured some on Senator Stanford's grounds, at Palo Alto, that were over *ten feet* between the whorls. Trees eight years planted were from thirty-five to fifty feet high, being out-topped only by the fast-growing *Eucalyptus Globulus*, or Blue Gum; but they had outgrown the other varieties of *Eucalyptus*. They rarely attain the age of thirty years, north of Sacramento. General Bidwell says they rarely survive twenty years at Chico, usually beginning to fail when they are about fifty feet high, with a diameter of fifteen to eighteen inches.

THOMAS H. DOUGLAS.

Waukegan, Ill.

A CREAM-COLORED SKUNK CABBAGE.—The well-known Skunk Cabbage, botanically *Symplocarpus fœtidus*, is noted for the great variety of shades and tints which the flowers present. One may get a bouquet of fine varieties from the flowers, if one can bear a fetid smell. Last year, Mr. C. F. Saunders sent us a specimen which was cream-colored. This is very rare, notwithstanding the great range of variety in color. It may, however, be noted that what are called albinos may be occasionally found in any class of flowers. It may be further noted that the disagreeable odor of the flower comes from the plant juices, and not from the flower itself. It is only after they are cut that they become disagreeable. If one could find a board in the swamp, and could kneel down so as to get at the flowers before being cut from the parent plant, the odor would be found rather agreeable than otherwise.

DOUBLE GRAPES.—I wish to call your attention to a most remarkable freak of nature that came under my notice a few weeks ago. A gentleman living in Oakland sent me a bottle of alcohol in which were preserved several Flame-Tokay grapes, inside of each of which there was a perfect, smaller grape. Outside of these, imbedded in the pulp of the outer grape, there were a number of perfect seeds. The inside grapes had no seeds, but a smooth skin, and much resembled, when taken out, a green gooseberry. The inner berry had no direct connection with the stem, but was connected at that point with the outer grape.

In his note, the statement was made that the berries on one section of a large cluster were all of this character.

Palo Alto, Cal. EMORY E. SMITH.

THE PINE KNOT.—Near Clinton, Ark., there stands a large White Oak, which, with the top of a pine tree (*Pinus rigida*) firmly imbedded in its trunk, forms a natural curiosity deserving mention. This oak, as can be seen in the accompanying cut, is nearly two and a half feet in diameter; is in perfect health, and, judging from similar trees cut in this section, is at least 200 years old. "The Pine Knot," as it is called, is of course much older, as the pine had fallen when the oak was but a sapling. One limb of the pine formed a crotch which bore so closely upon the oak as to push it out of its perpendicular position, and "as the twig is bent the tree is inclined."

THE PINE KNOT.

This limb projects on the opposite side of the oak from that seen in the picture, and at such an angle as to appear as coming from the heart of the oak, and is so perfectly encased as to not leave a scar. So the oak could not have been large.

The pine tree, having grown on higher ground, was held in position after falling, by a sort of natural terrace, so that the top of the body rested against the oak eight feet above the ground, and the oak grew around it and encased it so completely that now it will bear up as many people as can find footing—a dozen or more.

When the body of the pine rotted and burned away by forest fires, the top remained, entirely suspended, the lowest point being a limb which extends to within 18 inches of the earth.

The oak has "stooled out," so that four feet or more of the pine body is entirely encased, and you can see a limb, (with lady's hat on,) which looks to be a dead limb of the oak. The pine is quite sound and "rings" like earthenware when pounded upon.

The heart wood of these pines, after the sap has rotted away, or been burned by forest fires, is so full of resin as to remain lying on the ground in perfect preservation for ages. These "pine knots" form a marketable commodity, usually selling for $1.00 per wagon load, and are mainly used for kindling fires, for heating furnaces same as soft coal, and produce about as much smoke and soot.

It is strange that the forest fires will burn all

INTENTIONAL SECOND EXPOSURE

the dry, rotten sap wood off of a fallen pine, while the most combustible part remains intact, only receiving a charred coat which renders it almost indestructable.

The oak tree is a fair illustration of how trees will stool out over rocks and other obstructions. It is a frequent occurrence to see a tree that has grown up beside some large rock projecting from a bluff and has sent out an excrescence often covering the rock for some feet. Limbs meeting at right angles and growing together are often met with. One instance is where two limbs, three feet apart, seem to have sent out warty growths and are united, forming an inverted capital A. One tree on our place has a large limb one foot through, coming out near the ground, but returns to the body some three feet further up, and ten feet higher it emerges again, leaving a hole completely through the tree.

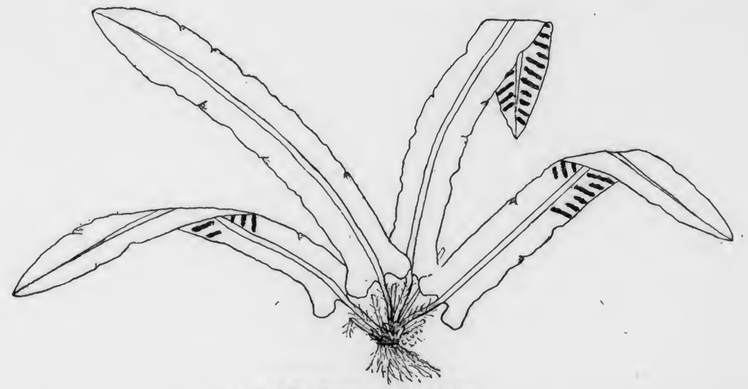
Clinton, Ark. C. E. PLEAS.

THE NEST BUILDING OF THE SWALLOWS.—Last summer I was very much interested in the different opinions expressed in your valuable journal by correspondents on the above subject, but want of time prevented me to enter also into this discussion, as I intended to make a long chapter of it, while with unusual facilities my observations extend to both sides of our hemisphere. In Germany, the swallows are by all people regarded with affection as harbingers of luck and good cheer. Nobody harms them and consequently they are very tame and abound in great numbers. I have been especially fond of them from my earliest recollections, and when I watched their way of sitting in long rows, often in company with the bold and impudent sparrows, on the beams which connected the high Gothic pillars at our church—an old one built in the twelfth century, and in which very many windows were broken, through which they entered; to the childish fancies the little white-breasted birds preached better sermons than the minister, or even Luther, whose life-size picture hung on one of those pillars underneath them, could have done. But the sparrows were noisy and quarrelsome, and, to my regret, the municipality concluded to have a restoration of the church with new windows all around. My father had the contract for this work, and so I learned and became intimately acquainted with many interesting facts concerning these swallow nests, some of which had no doubt been built centuries before, the number gradually increasing to thousands all around the windows, in the recesses formed by the thick brick walls. The workmen had to use stone-cutters' tools to chip them off, so hard had they become; and by their construction no doubt a certain glue like substance had been used with the chalky mortar. Their shape was variable, some half round and partly open, and some—the most of them—had only a round hole for their entrance. These were the nests of the Swifts, *Cypselus apus*, and *C pelasgia*, and also of *Hirundo urbica* and *H. rustica*; then the varied sizes and colors of the eggs which had to be sacrificed, testified to their different kinds. Some of them were very long and thin, some more oval, and some brownish-speckled; while the others were white, or nearly so. That the workmen in destroying the nests while the birds were breeding had a hard time of it, was natural. The distress of the birds was pitiful in the extreme. The house swallows often built their nests over the porch of the house door, about the entrance, and the rearing of their young is watched by all alike with pleasure.

Here on our own place I have seen them build under the roof of the barn, entering by a window, and under the shed close by. It took a pair a whole week after their arrival to decide about the best situation, and all their relations had to come and give their opinions, too, about it. When finally concluded, they kept for hours *wetting* the space on which the nest was to be fastened. This they did with their own saliva, while clinging to the wall, without leaving the shed. Later they brought material of mud from the bank of the brook, and cow-dung fresh from the pasture. In two days the home was done with the exception of the inner lining, which was not very elaborate. Dried grasses I have seen them pull up with their other material, but never saw nor heard the breaking of dried twigs. To the contrary, they avoided carefully a flight between trees, as if a stunning blow might be fatal or hurtful. While they often fly low, especially if a cat is around, which they try to chase off, they never fly where bushes obstruct their airy progress. I would be pleased if others of your readers had made like observations.

Hartford, Conn. MRS. WILHELMINE SELIGER.

IN THE HAUNTS OF THE HART'S-TONGUE.—The study of plant distribution presents many curious problems to the botanist. Plants that are common in one locality are unaccountably absent from near-by places which present seemingly the same conditions of soil and climate. An interesting instance of this is afforded by the Hart's-tongue Fern (*Scolopendrium officinarum*). In England it is said to be one of the commonest of plants, flourishing everywhere,—on banks, along roadsides, on walls, and in the chinks at the mouths of old wells. And, while it is found in America, it has been reported from only a few scattered stations and is nowhere common. Unlike its disposition in the Old World, it here seeks out the fastnesses of the forests for a dwelling place.



HART'S-TONGUE FERN.

The Hart's-tongue was first discovered in America, near Syracuse, N. Y., in 1807, by Frederick Pursh. These first specimens are often referred to Chittenango Falls, but we have it in Pursh's own words that he first detected it "in shady woods among loose rocks in the western parts of New York, near Onandago, on the plantations of J. Geddes, Esq." The two localities are not far apart, and, at Chittenango Falls, the fern still flourishes. With a fern-loving friend, I visited the latter station, last September. It is a wild and beautiful locality, just the spot to serve as a hiding place for botanical rarities. A large stream—the Chittenango—hurrying northward to Oneida Lake, here makes a plunge of many feet over a double series of falls and winds away through a narrow, wooded glen, hemmed in by great precipices of corniferous limestone which echo the roar of the waters and are always damp with its spray. The shadier parts of these cliffs shelter the Walking Fern and Slender Cliff-brake, while from every dripping ledge, the long, tapering, lace-like fronds of the bulbous Bladder Fern hang like a curtain. On the sunnier walls, the Purple Cliff-brake and Rue Spleenwort find a home.

Ever since the Chittenango cut its channel through these rocks, wind and weather have been steadily at work tearing them to pieces. Huge banks of rock fragments slope from the bases of the cliffs to the water. Over them, the falling leaves of centuries have spread a thick and yielding carpet of mould that affords a congenial soil for such trees as the Basswood, Hemlock, Striped Maple, Cedar and others. In the shade of these, where there is always a semi-twilight, the Hart's-tongue elects to grow.

The fronds have been likened to plantain leaves, but no one should mistake these thick, glossy, dark-green things for anything so common. Here and there along the cliffs they appear, a dozen or more leaves, half erect, in a circular clump. So lightly are the plants anchored in the yielding soil that they may be easily lifted out, roots and all, without digging. We find ourselves wondering how they manage to exist with such a precarious foot-hold; but the number of young plants to be seen testifies to their vigor. In September, the spores are ripe, and then nearly every frond is

loaded on the underside with velvety-brown lines that look like a sort of embroidery. So profusely do they fruit that a spore-bearing frond is noticeably heavier than a sterile one.

Taken separately, the frond can hardly be said to possess much beauty; but its odd shape will not fail to attract attention. The short, chaffy stipe, with its entire blade a foot or more long and scarcely an inch and a half broad, seems an anomaly among our common ferns. The frond is usually broadest toward the apex, and the base is heart-shaped. In growing plants, the edges of the fronds are crisped and wavy as if with a superabundance of tissue, giving the plant a very pretty effect.

The Hart's-tongue is a near relative of the Walking-fern, and occasionally shows the family trait of rooting at the apex. Another of its peculiarities is its tendency to fork. Fronds that fork and fork again are common and add an element of grotesqueness to the plant. With regard to the number of forking fronds produced, it is safe to say that no other species of American fern can equal it in this respect. WILLARD N. CLUTE.

Columbia University, New York City.

APPLE VARIATIONS.—I am much interested in the statement as to an apple variation, made on page 8 of your January issue, and I think I can explain it. I had an orchard in the southern part of Chautauqua County, New York, planted by my father in 1815, and coming to my hands on his death in 1836. He had grafted every variety then known and valued, and had taken especial pains to unite the qualities, in some cases by splitting the buds of different sorts, and effecting a growth of equal parts of each in one.

It was a much noted fact that he had so united the Rhode Island Greening and Tallman's Sweeting, the twig so formed could be and was grafted into other trees. I had several of those "Sour-and-sweet" trees in the old orchard, and grew many bushels of this mixed variety each year.

The broadly-spreading habit of the Greening variety was more closely followed by the "Sour-and-sweet" than the upright, closer form of Tallman's Sweet.

I had 35 or 40 large Greening trees, and stored and sold this mixed fruit with the Greenings for many years.

The fact that this union of these varieties was effected as I have described was, I think, widely known at that time, and was published in the early journals. It was well known to my friend, Dr. Day, of Rochester, N. Y., founder of the *Genesee Farmer*, and the first to become an agricultural chief of the Patent Office at Washington.

LORIN BLODGET.

Philadelphia.

Mr. Blodget evidently has over-looked the fact that the trees in question have never been known to vary from their normal condition till the present stated occasion, and then only a part of the tree departed from its normal form. If it were a distinct variety produced by splice-bud grafting, or produced in any way, it is scarcely conceivable that character now in evidence should have lain dormant so many years.

QUERCUS LYRATA, THE OVERCUP OAK.—The admirable "Illustrated Flora," of Britton and Brown, gives the range of the Overcup Oak as "New Jersey to Indiana and Missouri, Florida and Texas." Few persons have paid more attention to the oaks of America than the writer of this paragraph. Locations have had a special interest to him. Parties have often sent specimens for examination, but he has never seen any genuine of this species, except from the upper sources of the Kentucky River, where it was first discovered. Especially is it news to find it recorded as in New Jersey, so close to his own home. A twenty-five year old tree, on the grounds of Thomas Meehan & Sons, renders it a familiar acquaintance. It seems to have no close relationship with any other American species, and has many things in common with the *robur* section, of Europe. Though the cup almost covers the acorn, it has the general characters of the cup of a *robur*, and the leaves and twigs might be readily taken for a form of this celebrated English oak. Unlike other American oaks it has the character of not coloring in fall, but remains green till the frost destroys the leaves.

WHITE PONTEDERIA.—Mr. Edward Tatnal, Wilmington, Del., notes: "I have another chapter to add to *Pontederia*. In a neglected millpond, about two miles west of Laurel, in Sussex County, all the plants in sight from the road have pure white flowers."

GENERAL GARDENING.

WELCOME TO SPRING.

"Dost thou not rejoice
When the spring sends forth an awakening voice
Through the young woods? Thou dost! and in that birth
Of early leaves and flowers, and songs of mirth,
Thousands, like thee, find gladness!"

CO-OPERATION IN THE VEGETABLE WORLD.—Although mankind is essentially selfish, yet it has been noted that the far greater part of human action is not directly selfish, but is exerted unconsciously for the benefit of others. This has also been noted as a fact among the lower animals. There is just selfishness enough to enable them to take care of themselves; but the greater part of their lives is spent in caring for their young, or, in other words, in work in which they can have no great personal interest, except for the pleasure which the work itself affords.

It is interesting to know that this law prevails in the vegetable kingdom equally with the animal. Plants are not working for themselves alone, though the roots and leaves are working to build up an individual plant. It is beginning to be seen that they are working together in harmony for other purposes than for their own personal interest. This fact, as our readers know, has been used against the prevailing biological doctrine, that the forms and characters of a plant are the direct results of efforts to enable a plant to gain individual victories in the struggle for life.

With other plants, it is found that often one kind of plant cannot live without another. The whole tribe of lichens—those membranous or skin-like plants which grow on rocks and trees—could not possibly have existence at all, but for the co-operation of the algæ or water weeds, and the lower order of funguses, or members of the fungus family. It has been found also that certain plants which are known as root parasites, but which cannot be found attached to any roots, such, for instance, as the Snow Plant of the Nevada Mountains, are parasites on low orders of the fungus family,—while this very fungus cannot exist without this particular plant to feed on. It is now found that on the roots of clover, and many other plants of the leguminose family, there are nodules which imperfectly aid in carrying on the plant's existence. These nodules are formed by the very lowest orders of vegetation belonging to the bacillus family, which could not live without these roots to feed on; but these nodules, being once formed, have the power of absorbing nitrogen from the atmosphere or the earth to a much greater extent than the ordinary roots could, and in this way the plant is fully repaid for the encouragement which this lower organism derived from it. This principle of harmony and co-operation is now called the doctrine of symbiosis.

LYCASTES.—For winter and spring flowering, Lycaste is one of the nicest orchids we have. Their culture is simple and easy—anyone having a greenhouse where the temperature does not fall under 50° can grow them successfully.

I always pot them every other year, as soon as they have done flowering. The compost should consist of about equal parts of Jersey peat and good, rough, oak-leaf mould; clean crocks about the size of peas may also be added to keep it porous. I use good-sized pots, and fill them half full of clean crocks to allow good drainage.

After potting, care should be used in watering for about six weeks, till the new roots get a good hold of the new compost. Clay's Fertilizer is a good thing to feed them with. From August on, put a small pinch in each pot about once a week or 10 days. There are several species, but I think *Skinneri* is the most common and better known—some are very dark, while others are a delicate pink; and then comes the pure *Skinneri alba*. *Aromatica*, *lanipes*, *Deppei* and *cruenta*, I would recommend as next best. All require the same treatment. JOHN THATCHER.

Wynnewood, Pa.

IN BARTRAM'S GARDEN.*

John Bartram ! the fleeting cycles of the years
Have spread their lights and shades
Over Kingsessing's pleasant slopes
Where thou, in sweet accord,
With all the movings of the field and wood,
Didst till the virgin earth
And plantedst the growths of many climes,
That generations yet to come
Might feel the touch of that pure life
Which madest thy life sublime.
The simple seeds which thou didst sow
Have grown whilst thou hast slept,
And now I wander in thy groves
In primal solitude.

The years have come and gone—
The summer's heat, the winter's frost—
Men have passed and stones grown old
And hoary moss has crept
Over all thou lovedst;
And yet, O Bartram ! in these mighty trees
Thou livest still !
Thy simple spirit breathes
In all the verdurous avenues
That live because thou lovedst them.
Sweet nature, kindly spirit of the winds
That sings thy requiem in every waving bough,
That fills the bird and leaf with song,—
Sweet nature is thy mother still;—
She holds thee in her loving grasp
And spreads thy benedictions in the dew.
The buttercups, the grassy vales,
The sturdy giants of the wood—
All shall know thee, O Patriarch !
When names and years are lost.

L. H. BAILEY.

Cornell University, New York.

It may be as well to place on record here, that the people of Philadelphia owe more to Bartram than even his one famous garden pays for. Somewhere in the seventies, Professor Sargent moved some wealthy Philadelphia friends to offer to buy and present Bartram's garden to the city, in order to save the place from being sold for building, a fate which then threatened it. The party in charge of the property insisted that his duty to the estate was to cut down the trees, and sell the land for building purposes. Mr. Meehan, who acted for Prof. Sargent, knew that Andrew M. Eastwick had secured the garden from the Bartram family, mainly with the public-spirited idea of preserving everything relating to Bartram for all time. He felt justified in opposing this decision of the executor. There had been nothing done for generations to add an open space to the many miles of brick and mortar covering the huge city. He accepted a position as city Councilman, that he might save Bartram perchance, and start a movement for small parks and open spaces; and thus Bartram was saved, and the small park movement grew. Councilman Meehan has now been returned every two years since 1883; and under his leadership in that body, *thirty* of these small parks have been added to the bare half dozen originally laid out by William Penn, when the city was founded. Bartram was the first one taken by this process of law, and, as we see, it gave inspiration and life to the whole movement. Eighteen acres more of Bartram's farm have just been taken by the city, at a cost of some $70,000, in order to enlarge the Bartram Park boundaries.

*John Bartram, 1701–1777, was the first famous indigenous American botanist. He is a picturesque figure in the history of American agriculture and botany. Linnæus called him the greatest natural botanist in the world. In 1728, he established the first botanic garden in America, at Kingsessing, on the Schuylkill. Many of the trees which he planted, now of great size and interest, are still standing, and the stone house which he built is yet in good repair. The place is now a part of the parking system of Philadelphia, although it is allowed to retain its individuality.

SOLIDAGO ODORA.—"Substitutes for tea are numerous. Our contemporary, MEEHANS' MONTHLY, tells us that *Solidago odora* is used in place of real tea in several States of North America. It is especially used by the Germans. It does not say whether or not this infusion has the same properties as tea. Amongst other plants which have the reputation of replacing tea are: *Monarda didyma*, Oswego tea; *Viburnum cassinioides*, Carolina tea; *Salvia officinalis*, French tea; *Sida Canariensis*, tea from the Canaries; and more than fifty other kinds which pass for tea in certain countries."

The above, translated from *Lyon-Horticole*, leads us to say that it is not likely any of the so-called teas have the properties of Chinese tea. As a rule, the so-called American teas have never been long continued in use by any one. Indeed, they are often first brought into use from having been employed as adulterants. The following from volume 20 of the *Gardeners' Monthly* is true to-day:

"The 'Chinese tea,' said to be so successfully raised in Georgia, proves to be dried leaves of *Sida spinosa*, a sort of mallow. The way in which new 'teas' are discovered, is to fish out a perfect leaf from the teapot of genuine Chinese tea, and then look about you for some wild leaf of the same size and shape, and you have American 'Chinese tea!'" With genuine Chinese tea, the taste increases for it, rather than diminishes, which indicates that it possesses tonic properties, agreeable to human nature, which other substitutes do not possess.

THE COLORADO BLUE SPRUCE.—The *Abies* or *Picea pungens*, the representative in the Rocky Mountain of the *Abies Menziesii* of the Pacific coast, was first made known in the early sixties by Dr. C. C. Parry, who sent some seeds to Cambridge friends. The plant here represented was from these original seeds. It is a valued present made to the senior Conductor many years ago by his good friend, Prof. Sargent. It is now about 20 feet high, and is universally admired. The extreme hardiness and general adaptation to cultivation in the East was first made widely known by Robert Douglas, of Waukegan, Ills., who has done more than any other man to distribute widely this beautiful Rocky Mountain pine.

COLORADO BLUE SPRUCE.

THE HEATHER IN AMERICA.—When some stray plants of the Heather, *Calluna vulgaris*, were discovered in Massachusetts a few years ago, an impression was created in some quarters that it was indigenous to the United States. There were strong facts to support the contrary belief that they were introductions which had become, in a measure, naturalized. It would have been impossible for such an interesting plant as the heather to have been for a couple of hundred years in this country, to any great extent, without some one of our zealous collectors running against it. It is now known that when a few plants get a foothold in some parts of Massachusetts it seems so thoroughly at home that they soon spread. This of itself ought to be an indication that the plant was not native, because its ability to spread easily would have led it to cover a wide extent of territory, instead of the few isolated spots in which the original plants were found. It is now growing in considerable profusion around Boston, although twenty years ago only a few plants here and there were located. In some of these cases it is known that the plants were introduced. The plant in the West Townsend locality, for instance, was introduced about 1870. A Miss Moore visited Ireland, and gathered a bouquet of heather near Blarney Castle, Ireland. When dried, the bouquet was thrown into a swamp near the residence. Some years afterward, the plants were first noticed. So rapidly is the plant now spreading, that some of the cranberry growers are alarmed on account of its choking out the cranberry plants. It is said that there are at least two acres as completely covered by the heather, near West Townsend, as could be found anywhere in the Old World.

FUCHSIAS.—There are few flowers which give more pleasure than the fuchsia; but they are so subject, in our country, to the attack of the Red Spider, that the cultivator soon gets out of heart with them; but since these little insects can be so readily mastered and the method of their destruction is now so widely known, they are again getting into popular use. They do not like the open sun, and for this reason they are particularly well adapted to city yards where buildings and fences are a protection during the warm parts of the day from the sun's rays. They do not care for absolute shade, as, for instance, under trees or arbors; they seem to want an abundance of light and air, simply claiming protection from dry heat. Spring-raised plants bloom freely in August.

IN BARTRAM'S GARDEN.*

John Bartram! the fleeting cycles of the years
Have spread their lights and shades
Over Kingsessing's pleasant slopes
Where thou, in sweet accord,
With all the movings of the field and wood,
Didst till the virgin earth
And plantedst the growths of many climes,
That generations yet to come
Might feel the touch of that pure life
Which madest thy life sublime.
The simple seeds which thou didst sow
Have grown whilst thou hast slept,
And now I wander in thy groves
In primal solitude.

The years have come and gone—
The summer's heat, the winter's frost—
Men have passed and stones grown old
And hoary moss has crept
Over all thou lovedst;
And yet, O Bartram! in these mighty trees
Thou livest still!
Thy simple spirit breathes
In all the verdurous avenues
That live because thou lovedst them.
Sweet nature, kindly spirit of the winds
That sings thy requiem in every waving bough,
That fills the bird and leaf with song,—
Sweet nature is thy mother still;—
She holds thee in her loving grasp
And spreads thy benedictions in the dew.
The buttercups, the grassy vales,
The sturdy giants of the wood—
All shall know thee, O Patriarch!
When names and years are lost.

L. H. BAILEY.

Cornell University, New York.

It may be as well to place on record here, that the people of Philadelphia owe more to Bartram than even his one famous garden pays for. Somewhere in the seventies, Professor Sargent moved some wealthy Philadelphia friends to offer to buy and present Bartram's garden to the city, in order to save the place from being sold for building, a fate which then threatened it. The party in charge of the property insisted that his duty to the estate was to cut down the trees, and sell the land for building purposes. Mr. Meehan, who acted for Prof. Sargent, knew that Andrew M. Eastwick had secured the garden from the Bartram family, mainly with the public-spirited idea of preserving everything relating to Bartram for all time. He felt justified in opposing this decision of the executor. There had been nothing done for generations to add an open space to the many miles of brick and mortar covering the huge city. He accepted a position as city Councilman, that he might save Bartram perchance, and start a movement for small parks and open spaces; and thus Bartram was saved, and the small park movement grew. Councilman Meehan has now been returned every two years since 1883; and under his leadership in that body, *thirty* of these small parks have been added to the bare half dozen originally laid out by William Penn, when the city was founded. Bartram was the first one taken by this process of law, and, as we see, it gave inspiration and life to the whole movement. Eighteen acres more of Bartram's farm have just been taken by the city, at a cost of some $70,000, in order to enlarge the Bartram Park boundaries.

*John Bartram, 1701–1777, was the first famous indigenous American botanist. He is a picturesque figure in the history of American agriculture and botany. Linnæus called him the greatest natural botanist in the world. In 1728, he established the first botanic garden in America, at Kingsessing, on the Schuylkill. Many of the trees which he planted, now of great size and interest, are still standing, and the stone house which he built is yet in good repair. The place is now a part of the parking system of Philadelphia, although it is allowed to retain its individuality.

SOLIDAGO ODORA.—"Substitutes for tea are numerous. Our contemporary, MEEHANS' MONTHLY, tells us that *Solidago odora* is used in place of real tea in several States of North America. It is especially used by the Germans. It does not say whether or not this infusion has the same properties as tea. Amongst other plants which have the reputation of replacing tea are: *Monarda didyma*, Oswego tea; *Viburnum cassinioides*, Carolina tea; *Salvia officinalis*, French tea; *Sida Canariensis*, tea from the Canaries; and more than fifty other kinds which pass for tea in certain countries."

The above, translated from *Lyon-Horticole*, leads us to say that it is not likely any of the so-called teas have the properties of Chinese tea. As a rule, the so-called American teas have never been long continued in use by any one. Indeed, they are often first brought into use from having been employed as adulterants. The following from volume 20 of the *Gardeners' Monthly* is true to-day:

"The 'Chinese tea,' said to be so successfully raised in Georgia, proves to be dried leaves of *Sida spinosa*, a sort of mallow. The way in which new 'teas' are discovered, is to fish out a perfect leaf from the teapot of genuine Chinese tea, and then look about you for some wild leaf of the same size and shape, and you have American 'Chinese tea!'" With genuine Chinese tea, the taste increases for it, rather than diminishes, which indicates that it possesses tonic properties, agreeable to human nature, which other substitutes do not possess.

THE COLORADO BLUE SPRUCE.—The *Abies* or *Picea pungens*, the representative in the Rocky Mountain of the *Abies Menziesii* of the Pacific coast, was first made known in the early sixties by Dr. C. C. Parry, who sent some seeds to Cambridge friends. The plant here represented was from these original seeds. It is a valued present made to the senior Conductor many years ago by his good friend, Prof. Sargent. It is now about 20 feet high, and is universally admired. The extreme hardiness and general adaptation to cultivation in the East was first made widely known by Robert Douglas, of Waukegan, Ills., who has done more than any other man to distribute widely this beautiful Rocky Mountain pine.

COLORADO BLUE SPRUCE.

THE HEATHER IN AMERICA.—When some stray plants of the Heather, *Calluna vulgaris*, were discovered in Massachusetts a few years ago, an impression was created in some quarters that it was indigenous to the United States. There were strong facts to support the contrary belief that they were introductions which had become, in a measure, naturalized. It would have been impossible for such an interesting plant as the heather to have been for a couple of hundred years in this country, to any great extent, without some one of our zealous collectors running against it. It is now known that when a few plants get a foothold in some parts of Massachusetts it seems so thoroughly at home that they soon spread. This of itself ought to be an indication that the plant was not native, because its ability to spread easily would have led it to cover a wide extent of territory, instead of the few isolated spots in which the original plants were found. It is now growing in considerable profusion around Boston, although twenty years ago only a few plants here and there were located. In some of these cases it is known that the plants were introduced. The plant in the West Townsend locality, for instance, was introduced about 1870. A Miss Moore visited Ireland, and gathered a bouquet of heather near Blarney Castle, Ireland. When dried, the bouquet was thrown into a swamp near the residence. Some years afterward, the plants were first noticed. So rapidly is the plant now spreading, that some of the cranberry growers are alarmed on account of its choking out the cranberry plants. It is said that there are at least two acres as completely covered by the heather, near West Townsend, as could be found anywhere in the Old World.

FUCHSIAS.—There are few flowers which give more pleasure than the fuchsia; but they are so subject, in our country, to the attack of the Red Spider, that the cultivator soon gets out of heart with them; but since these little insects can be so readily mastered and the method of their destruction is now so widely known, they are again getting into popular use. They do not like the open sun, and for this reason they are particularly well adapted to city yards where buildings and fences are a protection during the warm parts of the day from the sun's rays. They do not care for absolute shade, as, for instance, under trees or arbors; they seem to want an abundance of light and air, simply claiming protection from dry heat. Spring-raised plants bloom freely in August.

INTENTIONAL SECOND EXPOSURE

MOVING STUMPS.—Mr. Isaac Myer says: "I note what you say, page 11, about taking out stumps of trees. I have had experience on this subject, having tried many plans to get rid of large chestnut stumps, which are very difficult to kill at the roots, and have found dynamite cartridges, placed under the centre of the stump, the best method of removing them. The larger roots should be cut through with an axe. The action of dynamite is different and much better than gunpowder, it shatters the entire stump into pieces which can then be easily handled and burned. If near a house or where people are passing, the charge, after it is put under the stump, should be also covered with logs chained or tied together with very heavy and strong ropes, and the blast will then exhaust itself on these. Millions of tons of rock have been blasted in this way, within a few feet of occupied dwelling-houses in this city, within a few years past. The plan you suggest, on page 11, has the following objections: 1st. The difficulty of excavating and cutting all the roots and raising and moving the weight. 2d. The necessity of digging the hole so deep that the top of the buried stump will not interfere with gardening operations over it, and the disposal of excavated material. 3d. If the stump is buried the wood rots, although some wood might send up saplings, and the ground sinks continually until the wood is entirely decayed. This requires continual attention so as to keep the grade of the ground level."

ISAAC MYER.

New York City.

THE MAHONIA AS CUT-FLOWER ORNAMENTS.—The London *Journal of Horticulture* tells us that among the most popular of plants for winter floral decorations, the branches of the *Mahonia aquifolia* take a high rank. In our country, the leaves change to a coppery tint; but it is said that in the Old World, an artificial dye is used to give the leaves a bronze color. These artificially-colored sprays give a peculiarly pleasing appearance to cut-flower work, in which they play a part.

OPEN SPACES IN PHILADELPHIA.—Since the movement for open spaces started in Philadelphia ten years ago, twenty-seven small parks have been established.

HAVE ANIMALS A SENSE OF HUMOR.—Whether or not animals have a sense of humor, is a difficult question to answer, considering that no one can well interpret the actions or expressions of these creatures; yet there are occasionally incidents which seem to indicate that they are capable of having humorous sensations. The writer of this paragraph once lived in the vicinity of a person who was fond of taking and bringing up young crows. It was the custom to place a basin of water, every morning, in the yard, for the young creatures to bathe in. There was usually a trouble between them as to who should have the first chance at the bath. On one occasion, one succeeded in obtaining the coveted privilege. As soon, however, as he had finished his ablutions, he quietly jumped out of the basin, took the edge of the basin in his beak, and then tilted it over, throwing out all the water. Then he walked away with an air of triumph. It was certainly his object to play a joke on his less fortunate fellow crows. More recently, a pair of fowls were noticed in the highway. As is well known, the cock birds often call the hens for a choice piece of food,—it may be a worm or something else. On this occasion, the hen was a long distance away. The cock took a small pebble in his mouth, and then gave a cluck to the hen to come and get it. The hen rushed vigorously toward her lord and master, who then quietly dropped the pebble and strutted away. The hen came to look for what she supposed was a delicious morsel, but could find nothing among the pebbles, where she supposed something good was in reserve for her. The glittering eye of the male bird surely indicated that he thought he was practicing a huge joke on his life-partner. It was evident, however, that she could not see the joke; and there is no doubt but that a curtain lecture was awaiting for him when his lordship returned.

HEATING SMALL GREENHOUSES.—The question, how to keep warm small greenhouses or plant rooms attached to dwellings, is often one difficult to decide. Connections with the cellar arrangements are often attempted, but a few hours of coal gas which sometimes trouble the most experienced, make such arrangements very unsatisfactory. Oil heating has often been suggested, but only during recent years has it seemed to be free from some evil or another. Those that we have seen in use work very well. The Banner Oil Heater of the Plume & Atwood Manufacturing Co., of New York, of which we give a representation herewith, has

Shows wrought iron stand in which fount rests.

been in satisfactory use, and the cuts will give an idea of manner of the arrangements of these heaters. They are set in a stand as shown, and can easily be removed when not needed. Even where ordinary heating is employed, they are useful to have on hand for emergencies.

Heater complete. Height 27 in.

NEW OR RARE PLANTS.

RUDBECKIA FULGIDA.—I was much pleased to see the frontispiece and description of the *Rudbeckia fulgida* in your December number.

Last midsummer I removed from a meadow a number of these plants. I thought them very beautiful. They were in bloom when I got them, and continued so until hard frosts. I was so interested in them I sent a description and sketch of them to the Botanical Department at Washington for the specific name, but it seemed that my description was not sufficiently explicit for identification.

I guessed that it was a *Rudbeckia*, or cone-flower, but as there are a number of such here, I wanted to know its particular name.

I notice that you place its flowering from early August to late in October. The young man who helped me to get my plants assured me with great positiveness that they were blooming when he was planting out tobacco,—which in this section is never done later than about the middle of June. I presume, of course, that the plant is a perennial.

G. M. ALVES.

Henderson, Ky.

NEW HOLLAND FLOWERS.—Among the arts of gardening, there is none more desirable than the knowledge of the special culture required for plants from different regions. What are known as Australian plants, or plants from the Cape of Good Hope, flower with us mostly in the winter season. They are extremely peculiar in their habits and appearance, but are always interesting. In most parts of the climate of the United States, they cannot be grown when depending on nature alone, as so many of our garden productions are made to depend; but the successful gardener knows how to guard against these natural obstructions, and one who has mastered this department of his art can make them thrive in any part of the American climate by artificial means just as well as they can be found thriving in their native places. It is these plants that comprise chiefly the celebrated winter gardens of the Old World. Few things, as already noted, give more pleasure than these peculiar Australian plants. It is to be regretted that their culture seems to be almost wholly ignored in the American garden. The difficulty apparently is that so few good gardeners know how to adapt them to American conditions. Some of our wealthier amateurs could well afford to establish an Australian house. They could readily find the necessary educated gardener to take care of them; but the possibility would be that in the great changes

incident to American society life, the good gardener would be leaving for something better within a few years, and his successor would probably have the rare plants go to destruction. It does seem, however, that even this difficulty ought not to be in the way of their culture in some notable instances.

THE HARDY FLOWER GARDEN.

THE ART OF OBTAINING AND FIXING NEW VARIETIES.—With plants, the fundamental basis of selection depends both on the temporary choice and insulation as a complement to permanence of choice and insulation.

If a new variety springs up in the seed-patch, it ought to be kept from the other plants,— its seed gathered separately, and propagated by itself.

If of those in the seed-patch a certain number grow with the characteristics of the variety selected, they must be specially cared for, and in their turn re-sown, and so on until the approximate characters of the desired variety are sufficiently fixed. If the fixation is incomplete, the variety thus propagated takes the name of a sub-variety ; if it be complete, it takes the name of a variety. This represents the basis of selection. Practically, it is better to experiment with several varieties. When one plant shows a slight disposition to vary, and produces flowers that approach more or less the type looked for, instead of sowing miscellaneously the gathered seed, it is better to sow separately the seeds of each sport, for it may be that some of them possess to a greater degree the physiological characters of the desired reproduction. In creating varieties, two forces are to be combatted : first that of returning to the originality ; the other of continuing individual qualities.

Experience teaches that the first of these forces is endowed with an energy against which the planter must have patience ; to fight for success, time plays a prominent part, —individual characters become in their turn ancestral traits.

Again, there are some kinds in which the tendency to vary is nearly irreducible,—they are generally those with which the half-breeds or hybrids have intervened at some former time. When it happens thus, it is generally best to propagate by slips or grafts.

It does not seem that Zonale Geraniums, chrysanthemums, carnations, gladioluses, etc., are of a nature to produce varieties which come true from seed.

With hybrids somewhat fertile, as well as with half-breeds, fecundation with one of its kind, carried through several generations, may come to produce sub-races often very permanent.

Teratological accidents may thus perpetuate themselves by seeds selected for several generations. In the same way, diseases, freaks, etc., are brought about.

There are many points for experimenting ; height (dwarfs and giants) ; kinds called major, minor, and intermediate ; kinds pertaining to the form of petals (petals entire, toothed or laciniated, as in the Asiatic *Ranunculus*) ; different kinds of colors (albinism or chromism) ; fasciations (cockscomb) ; various organic metamorphosisms, duplicature, proliferations, augmentation of stems, size and thickness of roots, precocity, etc. In a word, all vegetable digressions, when offering some interest to the cultivator, should be followed up. Very often a kind which does not appear at first to present any interest should, however, be kept, particularly if it belongs to a species which offers few varieties, for it may perhaps become the point of departure from other most interesting variations.

On the other hand certain conditions of culture singularly favor anomalous development of the particular characteristics of some species, such as those with fleshy or tuberculous roots, production of sub-heads with cabbages, lettuces, etc. Seed-patches of them out of season, transplantings, plantations at great distances, manures, are some of the factors which bring success in many cases.

Causes which produce albinism and other changes of color are little known. By feeling one's way a little, or by empirical proceedings, variations may be produced which are not due to cross-breeding. Cultivating in an impoverished soil, or one of a peculiar chemical nature, or of a different texture, flowering in the shade instead of the full sunshine, injuries to the seed-germs, seeds of different ages, changes in the size of the seeds, their maturity, etc., may aid in producing accidental variations on which depend the result.

Translated from *Lyon-Horticole* by Sarah M. Lanning.

FRUITS AND VEGETABLES.

LEMON GROWING IN CALIFORNIA.—It does seem that California is destined to enter into competition with fruit growers from all parts of the world. In orange culture it has long since achieved an eminence ; and now lemon culture is getting to be also one of their profitable industries.

THE BARRY PEAR.—The *Canadian Horticulturist* notes that the best winter pears are the Winter Nelis, Easter Beurre and Josephine de Malines ; but with these, there is a vacancy for something which will mature a little later, so as to carry pears right into the spring season. It is said that this vacancy is very well filled by the Barry pear. The Barry pear was raised in California, by Mr. B. F. Fox, and in quality is regarded as one of the best pears in its season.

THE POMONA CURRANT.—The hand of the improver is fortunately rarely at rest, and evidences of this may be seen by the innumerable varieties of flowers, fruits, etc.. which are yearly placed on the market. In some instances the seeking for something new is overdone, and results are materially of no account ; but then others are really meritorious and of great worth to horticulture. The originators of the latter are entitled to much praise, as the work of obtaining them is often the result of years of labor in selecting and caring for them.

A fruit to be sent out this year, the Pomona Currant, has attracted our notice as being a very probable welcome addition to the list of currants. Messrs. Albertson & Hobbs are sending it out after a twenty-three years' trial. They announce it to be the most productive of all the well-known varieties of red currant, and an excellent keeper ; has few and small seeds and large fruit ; is perfectly hardy and a vigorous grower.

COLUMBIAN RASPBERRY.—The raspberry is a fruit which has needed the attention of the improver ; no one variety seemed to combine features of great firmness, high quality and large size. A few years ago the Columbian Raspberry was introduced, and it is working its way rapidly into favor. Many authorities have given it the greatest praise as a variety for all-around purposes. The plants are unusually vigorous growers, and produce heavily. The fruit is firm, but does not crumble in picking,—has a sweet flavor and is excellent for canning, when it retains its size ; an excellent shipper. It does not sucker, like other sorts, and is propagated by layering the tips. Mr. C. L. Yates, Rochester, N. Y., has been prominent in its introduction, and he declares it one of the best varieties in cultivation.

ELBERTA PEACH.—You say, in a recent issue, that "the Elberta Peach is considered the most desirable of all the yellow-fleshed peaches, Crawford's Yellow excepting. Possibly some of its popularity comes from its high coloring."

I have been growing the Elberta both in Georgia and here in Connecticut for some years, and there is no question in my mind but what it is the best yellow peach now known, far superior to the Crawfords in every particular. As to its coloring, it is very bright indeed in the South ; but the Elberta, as grown in Delaware and New Jersey and in some sections of New England, the last few years, has been somewhat lacking in color, and if there is any one fault that may be found with this variety, I think it will be that in northern sections of the country it may lack the red blush on the sunny side, which makes it so attractive and desirable. Of course we shall know more about this after a few years more of fruiting ; but I am of the opinion now that in northern sections of the country we shall have to feed our lands pretty liberally with potash to give the Elberta its best color.

As to its hardiness of fruit bud. Monday morning, December 28th last, the temperature in this vicinity ranged from 15° to 20° below zero. Since then we have had a week of quite warm weather, thawing out things pretty thoroughly. An examination of our Elberta orchards show that very few of the fruit buds have been injured—practically all alive after this severe freeze ; and it was one of the varieties that gave us some little fruit here last year when the peach crop was a practical failure. It is not quite so hardy as Crosby, Connecticut, or Hill's Chili ; but I think more so than Mountain Rose, Oldmixon and Stump, which are quite desirable and hardy varieties here.

J. H. HALE.

South Glastonbury, Conn.

MILDEW ON THE PEACH.—Diseases of fruit trees are not as yet common on the Pacific coast; but some of our eastern troubles are following the trees. Complaints are made that, in the State of Washington, mildewed leaves are becoming prevalent.

PALMER RASPBERRY. — The well-known Gregg Raspberry has always been the favorite blackcap, and it will continue in use as the best late variety. For an early variety, a recent introduction, the Palmer, comes well recommended. It is said to fully equal the Gregg in quality, and is perfectly hardy. Fruit is of medium size and borne in abundance.

SIBERIAN WALNUTS. — It is said that the Siberian Walnut, *Pterocarya Caucasica*, has edible nuts of as much value as some other members of the walnut family. The tree has been found quite hardy in the north-eastern parts of the United States; but so far as known, no specimen has fruited in this country. It differs from our ordinary walnut and hickory in having wings to the husks. It was this that suggested the name of *Pterocarya*.

A USEFUL INSECT.—Mr. P. H. Strubler, of Naperville, Ill., sends some Black Walnuts that have had the shells completely hollowed out by some insect, in an early stage. They have not entered through the shell to the seed, so that the walnut is not in the least injured for edible purposes, but rather given an advantage, for after this skeletonizing by the insect the shell can be cracked with little more force than would have to be employed on a rather hard almond.

CHERRIES FOR MARKET.—Cherries are generally divided into three classes,—the Heart cherries, which have rather a hard, firm flesh; and the Duke cherries, which are quite as fine in size, but softer and, to many tastes, much more delicate; while the Morellos, or pie cherries, have always a more or less acid flavor, rendering them more valuable for canning purposes than for dessert. Whenever cherries are to be sent long distances, the Heart cherries, or, as they are called in the catalogues, Bigarreaus, are the best on account of their firmness. They are also much more highly esteemed than the others for canning purposes. The Napoleon and Black Tartarian, two very old kinds, are still classed among the best. The Yellow Spanish is also popular, being appreciated for jelly as well as for other useful purposes.

PROFITABLE APPLES. — American apples have a prominent place in British markets. The King of Tompkins County is the greatest favorite in England, bringing a higher price than any American apple in the British market. The dealers do not push them into popularity for the reason, it is said, that they are more liable to rot on their hands than the Baldwin. The Baldwin is a great favorite with them for selling, as it will keep longer in good condition than any other American apple that reaches them.

CO OPERATION IN SPECIAL MARKET GARDENING.—By an advertisement in a London paper, it is noted that a company has been formed, in that great city, with a capital of $100,000.00 for the special purpose of raising celery. It is said that the company has secured over two hundred acres of land expressly for celery culture. It seems that there is no vegetable which varies so much under special cultural conditions as celery. In our own country, some localities in Michigan have been found especially adapted to it. It is said that where the exact conditions are obtainable there is no market crop which is so profitable as celery raising.

PARIS GREEN FOR THE CABBAGE CATERPILLAR. — An agricultural paper of high character states that we may freely use Paris Green on the cabbage in order to destroy the Cabbage Caterpillar. It states that the ordinary solutions of Paris Green do not contain enough poison to injure any one; but the danger would be that the solution would sometimes be made much stronger than was desirable, and there can be no doubt there would be many fatal cases if Paris Green should become general in this case. The use of Paris Green should be strongly objected to in the case of any vegetable, like the cabbage, which retains within its closed leaves whatever may be cast upon it. In cases where the poison can be easily washed off by the rains, there would not be the same objection.

CUCUMBER FORCING.—The best cucumber for forcing is Rollinson's Telegraph. They can be had under glass the whole year round, and there are now quite a number of establishments that grow them for markets; and, with the right treatment it certainly will pay.

The most important question is, to get the true seed, raised from *cucumbers forced under glass*. This seed will always be expensive, as there are only a very few corns in the lower part of such fruit,—often none of them are full.

The writer of this has Henderson's variety, (Henderson & Co., New York City), and had best results,—fruits from fifteen to twenty-two inches long.

To raise cucumbers in the greenhouse, four to five inches of good rich ground mixed with thoroughly-rotten cow manure, are quite sufficient, and only one plant under each sash.

Put the seed in a two-inch pot, or better, make a hole two inches deep in the ground over the middle of the sash, and lay the corn in. Do not water until the seeds have germinated.

After the plant comes up, with two of the seed-leaves, heap the soil around the plants well under those leaves.

Keep up a night temperature of 60 degrees,—increasing by sunheat to 70 and 75 degrees. If the plants are to be watered, never allow them to get wet around the neck; and in the short days be careful with watering, else they are very liable to damp off.

The plants will grow now very rapidly, and are to be tied on horizontal wires,—one foot from the glass. Only male flowers appear at first, and these are all to be pinched off, to strengthen the growth. If a height of almost three and a half feet is reached, the main shoot should be pinched, and the fruit-bearing side shoots will appear.

Later on, these are to be shortened too, and the weaker ones must be cut off entirely. It is very profitable to bend the side shoots down to the ground, and cover them partially with soil, they will then also make roots and a longer fruit bearing period will be the result.

Without artificial hybridization, success would be doubtful; especially in cloudy, cold weather, when no ventilators can be opened. The quickest and most simple way is to take the male flowers, remove the floral leaflets, and slowly apply their pollen to the female flowers by pressing them into the latter. It will stay there long enough to accomplish the fruitsetting. The best time to do it is at mid-day, when the air is most dry. This method is far better than the transferring of the pollen with a camel-hair brush. Sometimes there appear two to five little cucumbers at one point,—be sure to let only one stay, removing the rest by pinching them off. After fruitsetting, use artificial fertilizer, such as nitrate of soda (not too much!), bone meal, etc., and water weekly with weak liquid manure.

From seed-sowing till fruit-bearing, takes almost ten weeks. In spring, very successful crops can be grown in hotbeds.

ALBERT MILLARD.

Lochiel, Harrisburg, Pa.

The illustration of Rollinson's Telegraph Cucumber is produced here through the courtesy of Messrs. Henderson & Co.

ROLLINSON'S TELEGRAPH CUCUMBER.

BIOGRAPHY AND LITERATURE.

OLD AND YOUNG.

Like leaves on trees, the race of man is found,
Now green in youth, now withering on the ground;
Another race the following spring supplies;
They fall successive, and successive rise.
—POPE.

THE WILD DAFFODIL.—

And then my heart with pleasure fills.
And dances with the daffodils.—WORDSWORTH.

Many writers consider the daffodil, *Narcissus pseudonarcissus*, to have originally been identical with the flower held sacred by the ancient Greeks, and associated with their Elysium, or "fields of heaven;" but what particular flower Homer intended under the name Asphodel does not appear. It may have been, as one writer suggests, "the Poet's Narcissus, which grows wild in Greece, or the *Polyanthus Narcissus*, which extends in a thin vein of distribution all the way from Portugal to Japan," but it could not be the daffodil as we know it, since this particular narcissus, although a native of all parts of South Western Europe, does not occur in Homer's country. Other authorities, again, consider the name daffodil to be but another form of the old English word affodile, which infers that which cometh early—the Dutch, indeed, know the daffodil as affodillelie—while some have even fancied it to be a corruption of Dis's lily, the flower by which the gloomy god tempted dulcet-eyed Persephone from her fair Sicilian home; whence Shakespeare's allusion, when Perdita, longing for spring flowers, exclaims:—

O Proserpina,
For the flowers now that, frighted, thou lett'st fall
From Dis's waggon! Daffodils
That come before the swallow dares, and take
The winds of March with beauty.

Owing probably to the mythologic association with the Poetic Narcissus, this flower of March is by many regarded as emblematic of unrequited love, and since it comes "before the swallow dares," hostage, as it were, of warm days, and happy sunshine—thus giving rise to joyous anticipations too often resulting but in disappointment—by some the daffodil is deemed typical of evanescent happiness and of deceitful hopes. Hence, too, perhaps, the funereal signification of the flower as employed by Milton in "Lycidas," when he writes—

And daffodillies fill their cups with tears
To strew the laureat hearse where Lycid lies.

Blowing at a season when the mind is powerfully drawn to the theme of the Resurrection, and therefore suitable for Easter decoration, the daffodil is everywhere known as Lide or Lent lily, the former, Mr. Friend explains, "being supposed to be a corruption of Hlyd Monath, the Anglo-Saxon name for March, and signifying, according to Aubery, loud or roaring month, the latter as being the flower of Lent."

See that there be stores of lilies,
Called by shepherds daffodilies,

so directs Drayton, and in "An Early Calendar of English Flowers," we read—

Then comes the daffodil beside
Our Ladye's smock at our Ladye's tide.

The application of the term to a particular ecclesiastical period has, however, as Mr. Grindon points out, "no further significance than such as arose upon the contemporaneousness of the religious observance with the cheerful onward and upward spring movement of living nature, declared as it is by nothing more conspicuously than by the welcome daffodil." In Lancashire, poor children sell Lent lilies, or Lents, as they call them, for pins; and in some parts the flowers go by the name of Lent cocks, in allusion, doubtless, to the old barbarous custom of cock-throwing, which was prescribed for Shrove Tuesday. Among other cognomens of the daffodil are Lent-rose, Lent-ball-flower, King's Spear, Trumpet-flower, and Chalice-flower; while in France, we find Jeanette Jaune, Coucou, and "pauvres filles de Sainte Clare." Not far from the pretty German bathing place, Ems, there grows a small trumpet daffodil, which takes its name from the little hill, Misselberg, where, alone in all the country round, the daffodil is found; and such is the association in the popular mind of the flower with the hill, that to the people the former is absolutely unknown save by the name of Misselblume. The wild daffodil, *Pseudonarcissus*, is found in abundance in many parts of England. This is the true English daffodil, and there is only one other species that is truly native, the *Narcissus biflorus*, or Primrose Peerless, found chiefly in Devonshire, where it is still known as daffadowndilly, and where children still repeat the old lines—

Daffadowndilly has now come to town,
In a yellow petticoat and a red gown.

This cheerful, homely old flower has, as Mr. Grindon remarks, a very striking individuality. "The tall, shapely vase in the centre, so elegantly weaved and plaited, is unique among British plants. So is the very peculiar pre-Raphaelite look of the flower, derived from its attitude when seen upon the opposite side of a little stream. When in crowds among the grass, there is not one after the scarlet Corn Poppy that in brilliant effect successfully rivals it" Although not an acknowledged native of Scotland, the daffodil is nevertheless found apparently wild in many parts, introduced doubtless by the monks, those cultivators of the soil in olden times. On Queen Mary's Island, in the Lake of Menteith, their golden heads keeping merry time to every tune blown by the breezes, great groups of daffodils dance in the sunlight; planted there, it may be, by the fair fingers of that most unhappy Queen herself, or by those of her devoted Maries. With our poets the "gilt-bowl daffodil," as Quarles styles it, is "a thing of beauty and a joy forever;" and, as Canon Ellacombe says, "a small volume might be filled with the many poetical descriptions of this delectable flower." Nor do they require rich soil or careful nursing, these beautiful, vigorous children of the sun; for, as Mr. Burbidge—writing in "Ye Narcissus, or Daffodil Flower"—says, "no garden so small, no home so humble, in which these golden daffadowndillies may not be grown and enjoyed. In large country places they should be planted along the grassy margins of walks, beside the lake, beneath the trees, where they may dance and sway and nod and flutter, as well becometh the joyous sisters of an April daffodilly."

How sweet they show to weary eyes,
These hardy yellow flowers that rise
On slender fluted stalks!
They need no culture, thought, or care,
But spring with spring-time free and fair,
O'er all our common walks.
W. T. HARDING.

Mount Holly, New Jersey.

CAMELLIA FLOWERS.—It is a matter of interest to know that, notwithstanding the free communication between one country and another which now exists, the methods of one nation are often completely unknown to another. Although steam and other advances in civilization have brought England almost to our doors, the American in England wonders at many of their popular practices; while, on the other hand, the Englishman travelling in this country is very apt to regard America as being, in many respects, far behind the times. This thought occurs strongly on reading a popular treatise which has just appeared in England, on the cultivation of the camellia. It is suggested that growers of the plant do not like to cut the stems with the flowers, as it takes the plant a year or two longer to make branches that will produce flowers. The author then goes on to state that recently the simple plan of wiring the flower has been introduced. The wire is thrust through the flower-bud, and then twisted so as to make an artificial stem. To the American this reads as if written fifty years ago. It was the general practice with camellias at that time. The camellia has long since ceased to be a popular flower for ornamental work in America, and chiefly because of this stemless character. Indeed, very few flowers would be considered desirable by any florist now, unless they produced a long stem with the bloom. Carnations, roses and violets, especially, are very often appreciated solely for the comparative length of the stem.

EARLY MINNESOTA HORTICULTURE.—The oldest living horticulturist of Minnesota, says the *Minnesota Horticulturist*, is Mr. A. G. Tuttle. He was born at Litchfield, Conn., in 1815, consequently, is now past eighty-one years of age. He came to Madison, Wis., in 1846, to Portage City in 1847 and to Baraboo in 1848. He was engaged in the mercantile business about five years, but abandoned it on account of failing health, and began orcharding in 1853.

GENERAL NOTES.

FRUITS ADAPTED TO THE SOUTH.—Griffing Brothers' Co., of Macclenny, Florida, pay especial attention to fruits adapted to Southern climates, and have issued a very instructive, illustrated catalogue in relation thereto.

THE PRINCESS ROYAL OF FLOWERS.—At a recent meeting of the Philadelphia Florists Club, Mr. John W. Colflesh remarked:

"Like everything else in this fast age of the world, the carnation has kept pace in the race for supremacy with the rose, chrysanthemum and some other flowers. If the rose is the queen of flowers, the carnation is princess royal. The evolution of the carnation is certainly one of the wonders of the latter part of the nineteenth century. Too much credit cannot be given to the American Carnation Society, for much time has been given by its members to encourage the improvement and proper cultivation of this popular flower."

PINUS INSIGNIS.—A correspondent says: "I believe *Pinus insignis* is now called *Pinus Californica* by some botanists,—and what we Californians have hitherto called *Pinus tuberculata*, is to be called *Pinus insignis*. How is this?"

Our advice to horticulturists is to let well-established names alone. It has been found impossible in gardening matters to root out a well-established name. Where some attempts have been made, they have resulted in utter confusion. We can only go by the accepted dictionaries in gardening, just as in ordinary language we have to accept Webster, Worcester or the Century. Those who think an accepted name wrong, must convert the dictionary makers. Horticulturists can only go by Nicholson or *Index Kewensis*. In this case, we must on these authorities continue to use *Pinus insignis*,—and *Pinus tuberculata*. There is however a *Pinus tuberculata* which is but a synonym of *P. insignis*. The *Pinus tuberculata* as named by Gordon, and the accepted name of *Index Kewensis* is another thing.

THE DAFFODIL.—It is now many centuries since, according to Ovid, the young man Narcissus was changed into a daffodil because of his pining away from seeing his lovely shadow in the water. But it can hardly be from sympathy with the unfortunate youth that the flower has continued to be so popular during all these long ages. Certain it is that it has as high a value to-day in the gardens of persons of taste as in the flower-plot of the humblest cottager. No garden is considered to be quite complete without its little patch of daffodils.

Of late years, florists have given attention to raising varieties from them, and the record of their many forms is a feature of the catalogue of all seedsmen. Double ones formerly carried off the palm for popularity; but in recent times the single variety is regarded as quite as desirable.

POPULAR NAMES OF TREES.—The great advantage of botanical names, hard as they may seem to be, and affected as their use sounds to those who are unfamiliar with them, is that they are of immense value to those who have to deal with plants coming from all parts of the world. Before us, as we write, there is a French horticultural magazine giving great praise to a tree which it describes as well adapted to certain places in ornamental gardening. It calls this tree, in the French popular vernacular, "charmilles," and speaks of a single tree as the "charme tree." It is only by rare chance that the ordinary reader is able to understand that the magazine is talking about a tree which, in our common language, would be called the hornbeam. If the botanical name, *Carpinus*, had been employed, there would have been no difficulty in at once comprehending to what tree reference had been made. Certainly, the unity of language—in other words, the unity of thought—is better served by one generally recognized appellation. It is presumed *Carpinus Betulus* is referred to. The American Hornbeam is equally desirable.

SITUATIONS WANTED

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENERS:—We shall be glad to furnish names of competent gardeners adapted to large or small places. Gardeners wishing situations should correspond with us. THOMAS MEEHAN & SONS, Nurserymen, Germantown, Philadelphia.

GARDENER—Situation wanted as gardener and florist, by single, middle aged man. Thoroughly experienced in growing flowers, fruits and vegetables. For further information address L. Beiderman, Huntsville, Ala.

HEAD GARDENER—Position wanted on private place by practical Scotchman, 30 years old, married, no children, thorough experience in every branch. Highest recommendations. Address, W. A., care of MEEHANS' MONTHLY.

GARDENER.—Scotchman, age 34, married, one child. Thorough practical experience in every branch of gardening and estate management. Excellent references. Address, W. L P., care of MEEHANS' MONTHLY.

GARDENER with first-class references, has charge now at a gentleman's place of 25 acres-lawn, 6 acres vegetables gardens, 12 greenhouses, 28 years' experience in Europe and this country, wants to change his place. "A. Z." Office, MEEHANS' MONTHLY.

GARDENER.—Situation wanted by a young man thoroughly experienced in all branches. Married, no children. excellent references. Address E. G., Box 366, Mamaroneck, New York.

FOR SALE OR RENT.—Florist and nursery establishment, best location near Cincinnati. Can be let in two parts. Nursery 40 acres, and more if needed, stocked with marketable ornamental and fruit trees. Greenhouses, newly built of swamp cypress, 8,000 square feet of glass, water heated, modern ventilated, water tower and steam pump. Dwellings eight rooms, frame; stables, carriage houses, etc. For particulars apply to "F. P.," care MEEHANS' MONTHLY.

AN EXTENSIVE NURSERY.—Of the most complete catalogues—complete in the sense of variety of articles offered—that have come to the Editors' desk, one is that of The Storrs & Harrison Co., Painesville, Ohio. None but those actually connected with a nursery are capable of realizing the extent and complexity of labor required in conducting a business of such varied interests. For the establishing of such a business, this firm is to be congratulated. They offer vegetable and flower seeds, greenhouse plants, bulbs, ornamental trees, shrubs, etc., roses, fruits, etc.

Cut Prices on Planet, Jr. Goods.

John A. Salzer Seed Co., La Crosse, Wis., are the only dealers daring to sell Planet Jr. goods at a fair margin. They sell the Planet Jr. Combined Drill for but $6.90, while other seedsmen must ask $9.00. Send 5 cents for their big seed catalogue.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of **Rare and Beautiful California Novelties. Many New Begonias. New Cosmos, Rare Cacti, etc.** Offered by no others.

Ventura-by-the-Sea, Cal

Potash

is a necessary and important ingredient of complete fertilizers. Crops of all kinds require a properly balanced manure. **The best**

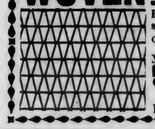
Fertilizers

contain a **high percentage of Potash.**

All about Potash—the results of its use by actual experiment on the best farms in the United States—is told in a little book which we publish and will gladly mail free to any farmer in America who will write for it.

GERMAN KALI WORKS,
93 Nassau St., New York.

WOVEN WIRE FENCE



Best on Earth. Horse-high, Bull-strong, Pig and Chicken-tight. With our DUPLEX AUTOMATIC Machine you can make 60 rods a day for 12 to 20 cts. a Rod. Over 50 styles. Catalogue Free.
KITSELMAN BROS., Box 66. Ridgeville, Ind.

Seeds! Seeds!

73d Annual Priced Catalogue of

VEGETABLE, FARM AND FLOWER SEEDS

is now ready and mailed free to all applicants.

BRIDGEMAN'S SEED WAREHOUSE,
37 East 19th St., New York City.

Put up in.....
25-lb. Bags
and 100-lb. Kegs

SOLD BY THE
SEEDSMEN

For pamphlet of interest, address,
Hammond's Slug Shot,
Fishkill-on-Hudson, N. Y.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

ARMSTRONG & McKELVY	Pittsburgh.
BEYMER-BAUMAN	Pittsburgh.
DAVIS-CHAMBERS	Pittsburgh.
FAHNESTOCK	Pittsburgh.
ANCHOR, ECKSTEIN	Cincinnati.
ATLANTIC, BRADLEY, BROOKLYN, JEWETT, ULSTER, UNION	New York.
SOUTHERN, SHIPMAN	Chicago.
COLLIER, MISSOURI, RED SEAL, SOUTHERN	St. Louis.
JOHN T. LEWIS & BROS CO	Philadelphia.
MORLEY	Cleveland.
SALEM	Salem, Mass.
CORNELL	Buffalo.
KENTUCKY	Louisville.

IT is a significant fact that responsible dealers sell and responsible painters use Pure White Lead (see list of genuine brands) and Pure Linseed Oil. They know their business. Those who don't know, try to sell and use the "just-as-good mixtures," "so called White Lead," &c., &c.

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information and card showing samples of colors free; also cards showing pictures of twelve houses of different designs painted in various styles or combinations of shades forwarded upon application to those intending to paint.

National Lead Co., 1 Broadway, New York.

TREES-SHRUBS-ROSES

The largest and most complete collections of **GENERAL NURSERY STOCK** in America, including all desirable **novelties.** Beautiful Catalogue (168 pages—1896 edition) free to customers; to others 10 cents. Every intending buyer should have it.

ELLWANGER & BARRY, Mount Hope Nurseries, Rochester, N.Y.

FLOWER ·· POTS ··

THE WHILLDIN POTTERY CO.,
713, 715, 717, 719 Wharton Street,
Philadelphia, Pa.

BRANCH WAREHOUSES:
Randolph Avenue and Union St., Jersey City.
Jackson Ave. and Pearson St., Long Island City.

Trees and Plants

ESTABLISHED IN 1856
One Acre under Glass
350 Acres in Nurseries

Our Fruit Trees have been fully tested in the Northern States for upwards of thirty-five years and proved to be well adapted there.

We Offer a large stock of **Pears, Peaches, Japanese Plums, etc., etc., Field-grown Roses, Rare Coniferæ, Palms, Camellias, Azaleas, Broad-Leaved Evergreens, 50,000 Canna** and an immense stock of **Greenhouse Plants.** . . . . . .

Address, **P. J. BERCKMANS**
FRUITLAND NURSERIES
AUGUSTA, GA.

CATALOGUES FREE

YOU CAN RELY ON
FLOWER, VEGETABLE AND LAWN GRASS
SEEDS
Which you may purchase of . . . . .

HENRY F. MICHELL,
1018 MARKET ST.,
PHILADELPHIA.

A Full Line of EVERYTHING FOR THE GARDEN at Moderate Prices.

BUY DIRECT and pay but one profit, Our assortment is one of the best and most complete in

Fruit and Ornamental Trees, Shrubs, Plants, Roses, Vines, Bulbs, Seeds.

Rarest new, choicest old. Send for our **catalogue today;** it tells it all; **an elegant book, 168 pages, magazine size,** profusely illustrated, **free.**

Seeds, Plants, Bulbs, Small Trees, etc, by mail postpaid, safe arrival and satisfaction guaranteed, larger by express or freight. 43d Year. 32 Greenhouses. 1,000 Acres.

THE STORRS & HARRISON CO., Box 70, Painesville, O.

SALZER'S GIANT FLAT DUTCH.

SALZER'S NORTHERN-GROWN SEEDS

Produce the finest vegetables and choicest flowers wherever planted—North, East, South, West. We wish to gain 100,000 new customers this year; with this in view we offer $1.00 for 14 cents, postpaid,

10 NOVELTIES FOR 14c.—WORTH $1.00.

1 pkg. Bismarck Cucumber, 15c.; 1 pkg. Red Ball Beet, 10c.; 1 pkg. Earliest Muskmelon, 10c.; 1 pkg. Earliest Carrot, 10c.; 1 pkg. Emp. Wilhelm Lettuce, 15c.; 1 pkg. Giant Onion, 15c.; 1 pkg. 14 Day Radish, 10c., and 3 pkgs. Brilliant Flowers, 15c.—total $1.00—sufficient for rare vegetables and exquisite flowers all summer long! Mammoth farm, vegetable and plant catalogue, 5 cents postage, or mailed free to intending buyers.

JOHN A. SALZER SEED CO., La Crosse, Wisconsin.

THOMAS MEEHAN & SONS

NURSERYMEN AND LANDSCAPE ENGINEERS,

Church and Chew Sts., Three squares from Pelham — TELEPHONE 9411-A. — Germantown, PHILADELPHIA.

ORNAMENTAL TREES, SHRUBS AND FRUITS
of every description. Catalogue Free.

GRADING, ROADMAKING AND DRAINING
PLANS PREPARED
for Grading or Planting and carefully carried out.

Trees for Spring Planting

A few more weeks will witness the opening of spring. But few planters have made preparations for it. Our new DESCRIPTIVE CATALOGUE "*A Guide to Tree Planting*," will lessen the labor and assist in making a selection from the great number of *Trees, Shrubs, Vines, etc.*, that are given by nurserymen. It will be mailed free of charge upon application. LANDSCAPE GARDENING in all its branches. PLANS PREPARED and carried out.

THOMAS MEEHAN & SONS

Germantown, Philadelphia — **Nurserymen and Landscape Engineers**

1,000,000 TREES Over 1,000 varieties. Fruit and Ornamental Shrubs, Vines and Roses. All standard and special varieties. Send for illus. Catalogue.
W. S. LITTLE & CO., Rochester, N. Y.

BOWKER'S FERTILIZERS
for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.
A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for **25c.**
Catalogue free. State for what purpose fertilizer is wanted when writing.
BOWKER FERTILIZER CO., - - - **Boston.**

None-Better-Grown

No better trees, small fruits, vines, roses, ornamental shrubs—no larger stock—no greater variety—no finer quality—anywhere. We sell direct to the consumer and save him 50 per cent. Write for illustrated catalog and learn how we do it.
Fruit crates and baskets. REID'S NURSERIES, BRIDGEPORT, OHIO.
STAR STRAWBERRY — ELDORADO BLACKBERRY

HIGH CLASS SEEDS.

Our Ninety-Sixth Annual Catalogue is now ready, and will be mailed FREE on application. It contains the largest collection in the world of

Vegetable, Flower & Farm Seeds,

including every standard variety and every novelty of established merit.

For Nearly a Century the Leading Seed House of America.

J. M. THORBURN & Co. 15 JOHN ST. NEW YORK

HARDY FERNS AND FLOWERS

You will find over 40 varieties of hardy

FERNS in my Catalogue, **beautiful**, and **easily grown.**
CYPRIPEDIUMS—white, purple and yellow.
TRILLIUMS—large pure white, purple, etc.
WATER PLANTS. Sweet Water Lillies, etc.
WILD FLOWERS and bedding plants.
IRIS—in great variety, with beautiful markings.
SHRUBS, ROSES, etc.

Send for Descriptive Illustrated Catalogue.

EDWARD GILLETT, Southwick, Mass.

WILD FERNS & FLOWERS

The most beautiful that grow in all countries. I grow and test them in this climate, and sell the hardiest. Hardy orchids, ferns, vines, climbers, lilies, shrubs, trees. Plants for sun and shade, for bog and rock-work, border plants, etc. Surprisingly low prices for the quality and kind of stock.

My illustrated catalogue describes about 700 kinds, tells where to plant and how to grow them. Mailed for 2c. stamp.

F. H. HORSFORD, Charlotte, Vt.

New, Rare and Beautiful Plants

Lord Penzance's New Hybrid Sweetbriars, Old Garden Roses, New Roses, Standard Roses, Philadelphia Lemoenei, New Lilacs, Lonicera Hildebrandtii, Spiræa "Anthony Waterer," Tecoma Smithii, new Weigelas, etc.

A large collection of Rare Hothouse and Greenhouse Plants, Anthuriums, Alocasias, Orchids, Rare Conifers and other beautiful Evergreens. Magnolias, Japanese Maples, with other choice Trees and Shrubs, Cannas, etc.

PÆONIES—A large collection of the finest in cultivation. Hardy Perennials, Phloxes, Japanese Iris, Roses, Clematis, etc. New and Standard Fruits, etc.

Catalogue on application.

JOHN SAUL, WASHINGTON, D. C.

THE GAULT RASPBERRY

A perpetual bearer. Fruit of delicious flavor and always fresh. Just the berry for private gardens. For cuts, circulars, colored plate or any information respecting it, send to the originator,

W. C. GAULT

Box 90. Ruggles, Ashland Co., Ohio.

Trailing Arbutus & Native Flowers

and best **Ornamental Trees and Plants** for landscape architects, parks, cemeteries and private places. Catalogue free. Lowest rates to the trade Apples, plums and currants wanted in exchange. Send lists.

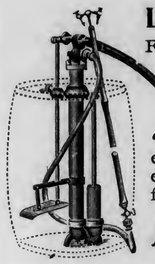
WM. H. HARRISON & SONS, Lebanon Springs, N.Y.
Wyomanock Nurseries.

---

100 Rocky Mountain Wild Flowers

are fully described in my '97 catalogue; free to flower lovers, and a packet of choice seeds included to those who enclose stamp and mention this paper.

D. M. ANDREWS, Boulder, Colo.



Lazy Man Wins

For years we sprayed our extensive orchards with the common Spray Pumps, but became disgusted with the hard, nasty work and invented the **"Eclipse."** Now we do the work easily and pleasantly. So does every man who uses them. Send for catalogue.

MORRILL & MORLEY
Benton Harbor, Mich.

WITH THE "INCOMPARABLE"

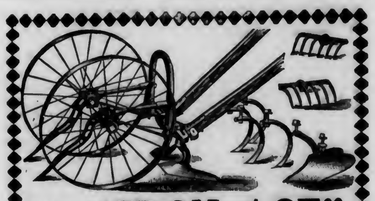
BORDEAUX NOZZLE

used on "World's Best" Spraying Outfits made only by THE DEMING CO., SALEM, OHIO.
Makers of PUMPS FOR ALL PURPOSES.
Ask your dealer for Deming Sprayers.
HENION & HUBBELL, General Western Agents, 61 to 69 No. Jefferson St., CHICAGO, ILL. Valuable illustrated 40 page book on Spraying, free. Our Spraying Outfits are used and recommended by leading horticulturists and experiment stations.

"UP-TO-DATE" SPRAY PUMPS

ALL BRASS.

$17.00 outfit for $6.00. Express paid. Will spray a 10-acre orchard per day. 75,000 in use. ***Satisfaction guaranteed or money refunded.*** Ill't'd Catalogue and Treatise on Spraying **free.** Ag'ts wanted. Exclusive territory given. Rapid sellers. Many of our agents are making from $10 to $15 per day.
P. C. LEWIS MFG. CO., Box 127 Catskill, N. Y.



The "IRON AGE" WHEEL HOES

High Steel Wheels cause them to run easily and steadily, not yielding to inequalities of ground.

Tubular Frame coupled to **malleable** castings give extreme lightness, with freedom from breakage.

We make 50 different implements, among them a full line of garden tools. Send for catalogue.

BATEMAN MFG. CO., Box 121, Grenloch, N. J.

For Lovers of Flowers.

We call the attention of our readers to the offer of Miss C. H. Lippincott, 319 and 323 Sixth Street, South, Minneapolis, Minn. Miss Lippincott is the pioneer seedswoman of America. For six cents in stamps and the addresses of two friends you will receive one packet each of Sweet Peas, Nasturtiums and Royal Show Pansies, Miss Lippincott's book, "Floriculture" (how to grow flowers from seed) and her complete and handsome catalogue.

BLOODGOOD NURSERIES

FLUSHING, N. Y.

TREES- Fruit and Ornamental, Deciduous and Evergreen

Shrubs, including Rhododendrons and Azaleas, Vines, Roses, etc.

Shade Trees of most sorts up to 3½ in. diameter. Fine stock. Low prices.

Address, KEENE & FOULK.

---

100 BEST EVERGREEN SEEDLINGS

Mention this paper.

delivered **free** by mail, only $1. 100 best **evergreens** 2 to 5 ft. delivered east of Rocky Mts., **only $10.** Write for **free catalogue** and **price list** & **50 big bargains,** selections from complete **nursery** stock. **Cash** paid for getting up **clubs** or to salesmen **with** or **without** experience. Address

D. HILL

EVERGREEN SPCIALIST, DUNDEE, ILL.

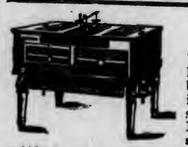
EVERGREENS.

Largest stock in America, including Colorado Blue Spruce and Douglas Spruce of Colorado.

Also Ornamental, Shade and Forest Trees, Tree Seeds, Etc.

R. DOUGLAS & SONS, Waukegan, Ill.

BUY NO INCUBATOR



and pay for it before giving it a trial.

The firm who is afraid to let you try their incubator before buying it, has no faith in their machine. We will sell you ours **ON TRIAL. NOT A CENT** until tried, and a child can run it with 5 minutes attention a day.

We won **FIRST PRIZE WORLD'S FAIR** and will win you for a steady customer if you will only buy ours on trial. **Our large catalogue will cost you 5 cents and give you $100 worth of practical information on poultry and incubators and the money there is in the business.** Plans for Brooders, Houses, etc., 25.

N. B. Send us the names of three persons interested in poultry and 25 cents and we will send you "The Bicycle: Its Care and Repair," a book of 180 subjects and 80 illustrations, worth $5.00 to any bicycle rider.

VON CULIN INCUBATOR CO.,

Box 180. Delaware City, Del.

Under New Management

ROMANCE

20 ROMANTIC STORIES FOR 10c.

More reading matter than any other magazine in the world.

A LIBRARY IN ITSELF.

Romances of Love and War, Romances of Real Life, Stories of Gallantry, Tales of Adventure, Stories of the Boudoir.

Best known authors and unknown authors.

SUBSCRIPTIONS $1.00 A YEAR

OR,

Romance and any $1.00 a year Magazine, $1.50.

EXTRAORDINARY PRICES OFFERS.

Send 10c for sample copy and particulars.

Gilson Willets

Editor and Publisher

1440 Broadway, New York

1

2

Four Steps

are all that stand between you and successful rose growing. First you write for the **New Guide to Rose Culture** which is sent free. It fully describes, accurately pictures and plainly directs you how to grow the famous **D. & C. Roses** and a thousand other beautiful flowers. Shows you how to take the next step—to get them by mail on their own roots ready to grow and bloom in pot or garden. Take the first step to-day. A sample of our floral magazine—"Success with Flowers," also sent if requested.

THE DINGEE & CONARD CO.
West Grove, Pa.

3

4

Garden and Gardens . . .

A Horticultural Magazine largely devoted to outline plans and descriptions of some of the best gardens in America. Each number has for its leading article an account of some one of these gardens with detailed descriptions of the trees and plants in use and their adaptability for grouping for best effects, so that taken as a whole it covers all departments of horticulture. : : :

The first twelve numbers treat of Newport Villa grounds in which some of the best gardening in America undoubtedly appears as arranged by some of our most eminent landscape architects. The writer has seen most of these villas planted and has watched their progress from the beginning, noting successes and failures alike. These 12 numbers will constitute a valuable contribution to horticulture, in a bound volume, for which they are especially prepared. Numerous other articles appear in each issue. : : : : : :

The work is printed on heavy paper and in large type, and illustrated with full page "half-tones" of the best class. : : : : : : :

Subscriptions $2.00 for the first 12 numbers. Single Copies, twenty cents. Address, : :

LUCIUS D. DAVIS
Editor and Publisher

Newport, R. I.

Good Housekeeping Chief Corner Stone Of Good Homes - -

for the maintenance of Happiness, Peace and Contentment, where the Wife and Mother, the Husband and Father reign supreme, and rule by means of the law of love; where one is the Mother at Home in the best sense of the word, and the other sways the scepter of righteousness forming lives well worth the living.

"However happy a home may be, it will be made happier by the presence of Good Housekeeping."
—*Atlanta (Ga.) Southern Cultivator.*

With a view of making all Homes happy, the December, 1896, number of Good Housekeeping will give a carefully prepared paper on "The Model Wife," by Rev. Henry Tuckley, D. D., and for January, 1897, one on "The Model Husband."

The first of a novel series of papers on "Good Cooking," appeared in the November issue of Good Housekeeping, being the experience of the Woman who Cooked and Went to Market and the Man who Ate and Paid the Bills—worthy the attention of every home dweller in Christendom.

Two papers will be given during the year 1897 on

First, "The Woes of a Nervous Man at Home," by a Woman of Nerve.

Second, "The Woes of a Nervous Woman at Home," by a Man without Nerve.

"The Woman with Bundles," will also have a hearing in due time.

As will a Scriptural Discussion of the, as yet, unsettledproblem of "How Poor Was Job's Turkey?"

On all new subscriptions for 1897, copies of Good Housekeeping for November and December, 1896, will be sent free of charge.

CLARK W. BRYAN CO., Publishers
SPRINGFIELD, MASS.

WE HAVE IT AT LAST!

AN EARLY DWARF LARGE FLOWERING COSMOS.

Blooms from July till frost.
Grows only 4½ feet high.
Color Snowy White, tinted with Rose.

THE FINEST NOVELTY of the YEAR.

PRICE 25 cts. PER PACKET.

and to each purchaser will be sent

FREE

DREER'S GARDEN CALENDAR for 1897

A handsome book of 168 pages, with beautiful litho-embossed cover showing the new Cosmos in colors and containing illustrations and descriptions of all the valuable new and standard Seeds, Plants & Bulbs.

HENRY A. DREER.
714 CHESTNUT ST.
PHILADELPHIA.

A Little Light

Shed about Beautiful FLOWERS FROM SEEDS BY THE Pioneer SEEDSWOMAN . . . of America.

My 1897 Catalogue, the handsomest published, tells the secret FREE to every reader of this Magazine

MISS C. H. LIPPINCOTT, 319 SIXTH ST. S. MINNEAPOLIS, MINN.

Southern Florist and Gardener.

THE ONLY FLORAL MAGAZINE FOR THE SOUTHERN CLIMATE.

ISSUED ON THE 1ST OF EACH MONTH.

$1.00 per Year, Ten cents additional to our handsome floral premiums, which we give free of charge to each new subscriber.

Liberal Cash Commissions to Agents.
Advertising Rates on Application.

—PUBLISHED BY—

The Southern Florist and Gardener Pub. Co.

ELIZABETH FRY, Editor and M'g'r. 336 W. GREEN ST., LOUISVILLE, KY.

SAMPLE COPY FREE.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

THE FAMILY MONEY MAKER!

Worth $100.00 a year and more to all who own land, a garden, orchard, or conservatory; covers, in plain language, by practical men, the care and cultivation of flowers, fruits, plants, trees, shrubs, bulbs, etc., etc., and tells how to make home grounds attractive.

3 AMERICAN GARDENING 10

America's brightest and most reliable gardening and family paper. Established 50 years. Illus. Weekly. $1.00 a year.

WITH HANDSOME PREMIUM

To introduce it to new readers we will send AMERICAN GARDENING three months (12 numbers) to any address on receipt of Ten Cents, in stamps or coin. Sample free.

AMERICAN GARDENING, P. O. Box 1697, N.Y.

PRACTICAL. POPULAR. SCIENTIFICALLY EXACT.

Indispensable to all who love gardens or the literature of gardens; to all who own country places or take pleasure in rural scenery; to all who desire a broader knowledge of trees, shrubs, fruits and flowers. GARDEN AND FOREST stands for the protection of our forests, the preservation of natural beauty, for a purer taste in the design and decoration of public and private grounds, and is universally pronounced the best horticultural journal ever published for Americans.

"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Winning, delightful and accurate."—*N. Y. Tribune.*
"A compendium of new information."—*N. Y. Herald.*

BEAUTIFULLY ILLUSTRATED. WEEKLY. $4.00 A YEAR.

Specimen copy free on application.

Garden and Forest Publishing Co. Tribune Building, NEW YORK

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO. ESTABLISHED 20 YEARS.

HORTICULTURAL ARCHITECTS AND BUILDERS

And largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**

The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

CAMPBELL'S EARLY Our Marvelous New **GRAPE**

Best and most valuable. Highest commendation from highest authorities. Hardy, healthy, rampant, productive. Early or late. Largest clusters, finest quality, not foxy. Seeds need not be sent abroad. None genuine without our seals. We guarantee safe arrival by mail. Largest stock of Grape Vines in the World. Small Fruits. Introducer of matted and Jacket Hosiery and Rye Covers. CATALOGUE FREE. GEO. S. JOSSELYN, FREDONIA, NEW YORK.

BURPEE'S FARM ANNUAL for 1897

TELLS the PLAIN TRUTH About The BEST SEEDS that Grow! With hundreds of illustrations, remarkable New Novelties painted from nature, it is "The Leading American Seed Catalogue." Mailed FREE.

W. ATLEE BURPEE & CO., PHILADELPHIA, PA.

"JUST RIGHT!"

The Verdict of Users of the New

No. 6 and **No. 7**

IMPROVED MODELS OF THE

Remington

Standard Typewriter.

A maximum of Durability, Convenience and Economy, with a minimum of machinery.

SEND FOR CIRCULARS.

WYCKOFF, SEAMANS & BENEDICT,

105 S. Ninth St., Philada. (Continental Hotel.)

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

Southern Florist and Gardener.

THE ONLY FLORAL MAGAZINE FOR THE SOUTHERN CLIMATE.

ISSUED ON THE 1ST OF EACH MONTH.

$1.00 per Year, Ten cents additional to pay postage on one of our handsome floral premiums, which we give free of charge to each new subscriber.

Liberal Cash Commissions to Agents.
Advertising Rates on Application.

PUBLISHED BY

The Southern Florist and Gardener Pub. Co.

ELIZABETH FRY, Editor and M'g'r. 336 W. GREEN ST., LOUISVILLE, KY.

SAMPLE COPY FREE.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

THE FAMILY MONEY MAKER!

Worth $100.00 a year and more to all who own land, a garden, orchard, or conservatory; covers, in plain language, by practical men, the care and cultivation of flowers, fruits, plants, trees, shrubs, bulbs, etc., etc., and tells how to make home grounds attractive.

3 AMERICAN GARDENING 10

America's brightest and most reliable gardening and family paper. Established 50 years. Illus. Weekly. $1.00 a year.

WITH HANDSOME PREMIUM

To introduce it to new readers we will send AMERICAN GARDENING three months (12 numbers) to any address on receipt of Ten Cents, in stamps or coin. Sample free.

AMERICAN GARDENING, P. O. Box 1697, N.Y.

PRACTICAL. POPULAR. SCIENTIFICALLY EXACT.

Indispensable to all who love gardens or the literature of gardens; to all who own country places or take pleasure in rural scenery; to all who desire a broader knowledge of trees, shrubs, fruits and flowers. GARDEN AND FOREST stands for the protection of our forests, the preservation of natural beauty, for a purer taste in the design and decoration of public and private grounds, and is universally pronounced the best horticultural journal ever published for Americans.

"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Winning, delightful and accurate."—*N. Y. Tribune.*
"A compendium of new information."—*N. Y. Herald.*

BEAUTIFULLY ILLUSTRATED. WEEKLY. $4.00 A YEAR.

Specimen copy free on application.

Garden and Forest Publishing Co. Tribune Building, NEW YORK

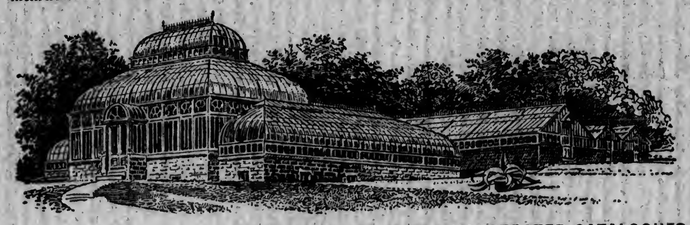
WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

CAMPBELL'S EARLY *Our Marvelous New* **GRAPE**

Best and most valuable. Highest commendation from highest authorities. Hardy, healthy, vigorous, very productive. **Early or late.** Largest clusters, finest quality, not foxy. **Seeds need not be swallowed.** None genuine without our seals. We guarantee safe arrival by mail. Largest stock of Grape Vines in the World. Small Fruits. Introducer of unrivalled **Red Jacket Gooseberry** and **Fay Currant.**

CATALOGUE FREE. **GEO. S. JOSSELYN, FREDONIA, NEW YORK.**

BURPEE'S FARM ANNUAL for 1897

TELLS the PLAIN TRUTH About

The BEST SEEDS that Grow! With hundreds of illustrations, remarkable **New Novelties** painted from nature, it is **"The Leading American Seed Catalogue."** Mailed FREE.

W. ATLEE BURPEE & CO., PHILADELPHIA, PA.

"JUST RIGHT!"

The Verdict of Users of the New

No. 6 and **No. 7**

IMPROVED MODELS OF THE

Remington

A maximum of Durability, Convenience and Economy, with a minimum of machinery.

Standard Typewriter.

SEND FOR CIRCULARS.

WYCKOFF, SEAMANS & BENEDICT,

105 S. Ninth St., Philada. (Continental Hotel.)

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

INTENTIONAL SECOND EXPOSURE

LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS

STEAM AND HOT WATER HEATING ENGINEERS
Plans and Estimates furnished on application

Largest Builders of Greenhouse Structures. Six Highest Awards at the World's Fair
Send four cents postage for illustrated catalogue

LORD & BURNHAM CO.
ARCHITECTURAL OFFICE, 160 FIFTH AVE., COR. 21st STREET, NEW YORK.
Factory: Irvington-on-Hudson, New York Mention Paper

FLOWER POTS—STANDARD

You will make a mistake if you place your order for Flower Pots without first receiving our estimate for the same. Our plant is now the largest in the WORLD.

STOCK UNLIMITED. GOODS UNEQUALED

A. H. HEWS & CO., North Cambridge, Mass.

LANDSCAPE AND SANITARY ENGINEERING

Sub-division and treatment of property for towns, parks and villa sites. Designs for grading, road building, and other improvements. Public and domestic water supply. Sewage disposal for houses and towns. Reports, estimates, specifications and superintendence.

TOPOGRAPHICAL ENGINEERING AND SURVEYING — HAROLD VAN DUZEE — PHILADELPHIA, PA. 427 WALNUT ST.

EDWARD CAMPBELL
LANDSCAPE ARCHITECT AND ENGINEER
ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. Fine Crushed Stone for Walks and Carriage Drives.

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS. The finest general assortment of Hardy Ornamental Plants in America. Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.
THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

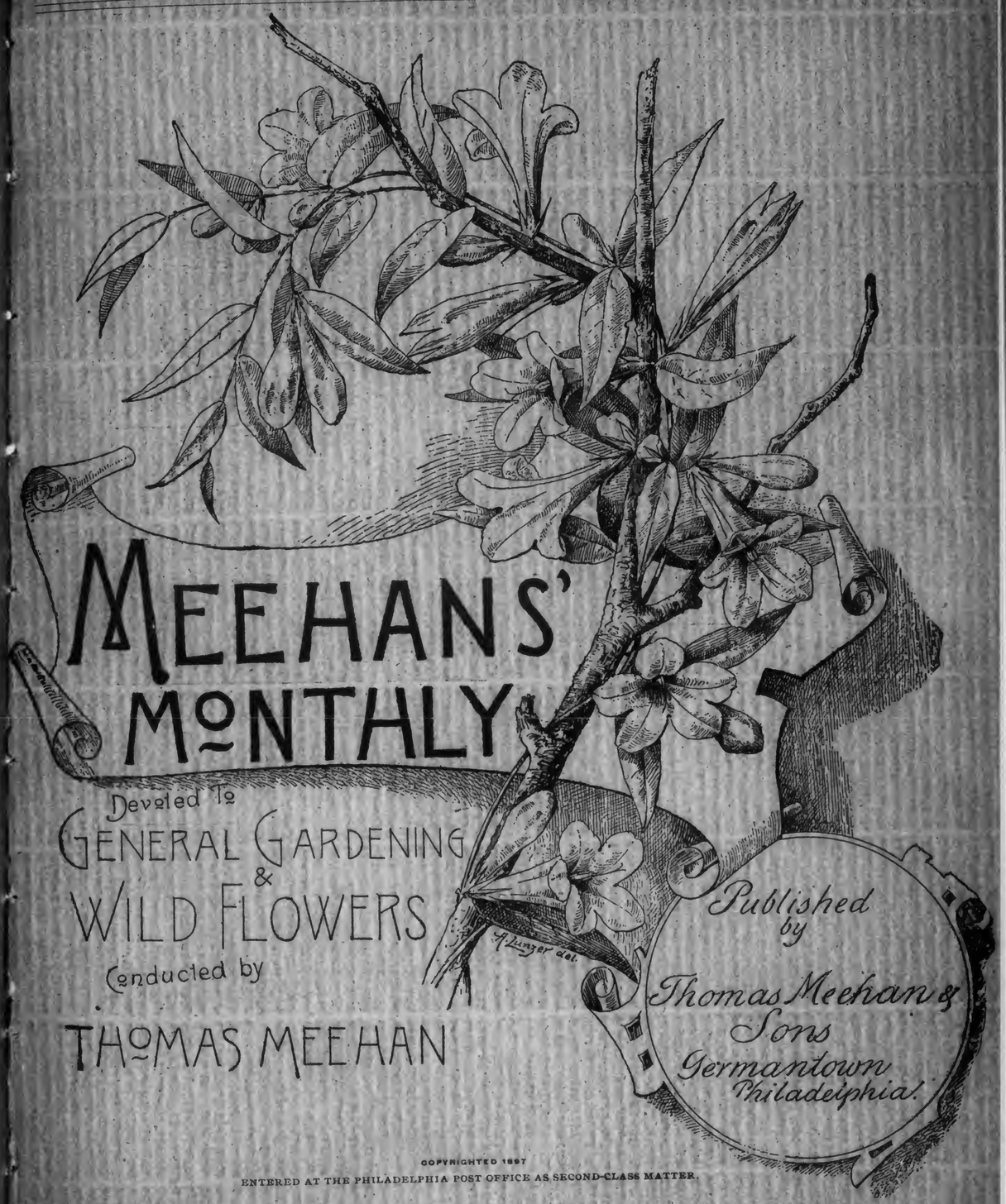
We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without putty. Latest methods of Ventilation, Steam and Hot-Water Heating. Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. ☞ Don't fail to get our Plans and Prices.

PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

WHEN WRITING TO ADVERTISERS, PLEASE MENTION MEEHANS' MONTHLY.

VOL. VII APRIL, 1897 No. 4

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



MEEHANS' MONTHLY

Devoted To
GENERAL GARDENING
&
WILD FLOWERS

Conducted by
THOMAS MEEHAN

Published by
Thomas Meehan & Sons
Germantown
Philadelphia.

COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

Meehans' Monthly

PUBLISHED MONTHLY BY

THOMAS MEEHAN & SONS,
Germantown, Phila.

Subscription Price $2.00 per year.

$1.00 for Six Months. Back Numbers 20 cts. Each.
Two Subscriptions for $3.50 per Year.

ADVERTISING RATES ON APPLICATION

Forms close on the 20th of each Month, preceding date of issue.

Address all Correspondence relating both to Editorial and Advertising matter, to

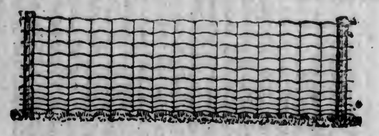
THOMAS MEEHAN & SONS, Publishers
Germantown, Phila., Pa.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.
WM. WARNER HARPER, MANAGER

The choicest **MAGNOLIAS, JAPANESE MAPLES** and other **TREES and SHRUBS** accurately described in our **New Catalogue.** Profusely illustrated, including three lithographs. Contains prices of large and small trees, specimens for immediate effect; and special prices for quantities. **A Guide to Tree Planting,** the most complete catalogue of its kind ever published. 6 cents in stamps.

THOS. MEEHAN & SONS, GERMANTOWN, Philadelphia.



Unruly Stock at a Premium

We want animals to show off our fence, **persistent** fighters for "liberty," whose war cry shall be "up and at 'em" again. We bought a Jersey bull, "highly recommended" for the position, but two rounds satisfied him, and neither dogs or red rags could induce him to give the **Page Fence** another trial.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

NOVELTIES IN PLANTS, FRUITS, ETC.
A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

Wood Ashes

Direct from Canada, collected by ourselves in the hardwood districts, *tested,* and shipped under **our own guarantee** of strength and purity. Buy ashes or other fertilizers only of responsible concerns. Our twenty-five years in business, ample capital and facilities, combine to make our guarantee of value.

BONE AND WOOD-ASH FERTILIZER, $25 per ton. An excellent combination. Write for particulars.

BOWKER FERTILIZER COMPANY, 43 CHATHAM ST., BOSTON.
Manufacturers of Special and General Fertilizers for all crops and all soils, Bowker's Lawn Dressing. Everything in the fertilizer line.

Rhododendrons
of American-grown hardy sorts.

Japanese Maples
and other Rare Plants.

Parsons & Sons Co.
LIMITED,
Kissena Nurseries, Flushing, N. Y.

BLOODGOOD NURSERIES
FLUSHING, N. Y.

TREES- Fruit and Ornamental, Deciduous and Evergreen

Shrubs, including Rhododendrons and Azaleas, Vines, Roses, etc.

Shade Trees of most sorts up to 3½ in. diameter. Fine stock. Low prices.

Address, KEENE & FOULK.

GREENSBORO PEACH

The finest white flesh peach in existence. Ripens before the Alexander. Extra large, fine flavor. **Donaldson's Elmira Asparagus Roots.** A new production of rare merit. **Strawberry** Plants, **Japan Plums, Small Fruits, Tenn. Peach Seed.** Catalogue FREE.

HARRISON'S NURSERIES, Berlin, Md.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

LOBELIA SYPHILITICA.

LOBELIA SYPHILITICA.

BLUE CARDINAL.

NATURAL ORDER, LOBELIACEÆ.

LOBELIA SYPHILITICA, Linnæus.—Stem hairy, one to three or four feet high, angular, nearly simple; leaves two to four inches long, oblong or ovate-lanceolate, acute, sinuate-serrate; raceme four to ten or twelve inches long; calyx, bristly-ciliate, short, with the margins of the sinuses folded back; corolla nearly an inch long, sometimes tinged with purple, rarely milk-white. (Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*. Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.

The excellent work, from which the description is taken because the plant selected for the artist was gathered near the district covered by the author, gives for its common name "Syphilitic Lobelia," which is the botanical name translated; but besides the inelegancy, and error in grammatical construction which it involves, the name is not really common, as it is not employed. There is, as far as the writer knows, no common name in use. Tournefort, a well-known author anterior to the time of Linnæus, adopts the name of Cardinal—as given to *Lobelia cardinalis*—for the whole genus, and then has "Blue Cardinal" for this species. It is pretty and appropriate enough to be generally adopted by those who do not like long Latin names for every day use. It is remarkable that so pretty a wild flower, pressing its beauty on us in so many ways in autumn scenery, should not have received any pet name, or have, indeed, found any place in American poetry.

Conrad, the geologist-poet, says, on leaving his New Jersey home,

> "New-mown meadows, adieu! India's spices excelling,
> Where the scarlet Lobelia bends bright o'er the stream;"

and Whittier, the Quaker poet, in his "Among the Hills," tells us that

> "Along the roadside, like the flowers of gold,
> That tawny Incas for their gardens wrought,
> Heavy with sunshine drops the golden-rod,
> And the red pennons of the Cardinal flowers
> Hang motionless upon their upright staves."

But all this might be said as well of the Blue as of the Red Cardinal, for both grow in similar situations and often both grow together. In damp meadows, or in moist places along streams, it is sometimes seen in great abundance, and often plays an important part in the proverbial beauty of American autumnal scenery. This is especially true of it when in its more northern locations. In the South, where the writer has particularly noticed it in the mountain ranges which divide North Carolina from Tennessee, it is in bloom before the autumn tints appear, and the leaves are very luxuriant and out of proportion to the mass of flowers. As the writer has seen it along the northern lakes at the end of August, the growth is reversed. The foliage is more contracted, and the bright blue of the flowers given a greater advantage; and which, among the orange and brown of ferns and falling tree leaves, scarlet sumachs, and yellow golden-rods, nature uses in her great autumn pictures to immense advantage. The Pennsylvania specimen used in our illustration is just between these two extremes, and gives an excellent idea of its average appearance. Beautiful as it is in nature, it is equally striking as a garden plant. It does very well under culture so long as the situation is not too much exposed to the hot sun. There are quite a number of shades of color among the garden varieties,—some believe them to be hybrids; and it appears, by a paragraph in the third volume of the *Botanical Gazette*, that hybrids may occur in nature. Mr. J. Schneck, of Mount Carmel, Illinois, there says:—"In addition to a red form differing in no respect but color, there is one which appears to be a hybrid between *Lobelia syphilitica* and *Lobelia cardinalis*. The leaves and calyx are nearly as hairy as in *Lobelia syphilitica*; bracts intermediate; the flowers have the slender tube and the aspect of *Lobelia cardinalis*, but broader at the mouth, and with more conspicuous folds in the throat, nearly as large as in *Lobelia syphilitica*. It has also the reflexed calyxes of the latter species, but they are very short. It grew in the midst of a patch of *Lobelia syphilitica*, in

COLOR PLATE

LOBELIA SYPHILITICA.

BLUE CARDINAL.

NATURAL ORDER, LOBELIACEÆ.

LOBELIA SYPHILITICA, Linnæus.—Stem hairy, one to three or four feet high, angular, nearly simple; leaves two to four inches long, oblong or ovate-lanceolate, acute, sinuate-serrate; raceme four to ten or twelve inches long; calyx, bristly-ciliate, short, with the margins of the sinuses folded back; corolla nearly an inch long, sometimes tinged with purple, rarely milk-white. (Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*. Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.

The excellent work, from which the description is taken because the plant selected for the artist was gathered near the district covered by the author, gives for its common name "Syphilitic Lobelia," which is the botanical name translated; but besides the inelegancy, and error in grammatical construction which it involves, the name is not really common, as it is not employed. There is, as far as the writer knows, no common name in use. Tournefort, a well-known author anterior to the time of Linnæus, adopts the name of Cardinal—as given to *Lobelia cardinalis*—for the whole genus, and then has "Blue Cardinal" for this species. It is pretty and appropriate enough to be generally adopted by those who do not like long Latin names for every day use. It is remarkable that so pretty a wild flower, pressing its beauty on us in so many ways in autumn scenery, should not have received any pet name, or have, indeed, found any place in American poetry.

Conrad, the geologist-poet, says, on leaving his New Jersey home,

> "New-mown meadows, adieu! India's spices excelling,
> Where the scarlet Lobelia bends bright o'er the stream;"

and Whittier, the Quaker poet, in his "Among the Hills," tells us that

> "Along the roadside, like the flowers of gold,
> That tawny Incas for their gardens wrought,
> Heavy with sunshine drops the golden-rod,
> And the red pennons of the Cardinal flowers
> Hang motionless upon their upright staves."

But all this might be said as well of the Blue as of the Red Cardinal, for both grow in similar situations and often both grow together. In damp meadows, or in moist places along streams, it is sometimes seen in great abundance, and often plays an important part in the proverbial beauty of American autumnal scenery. This is especially true of it when in its more northern locations. In the South, where the writer has particularly noticed it in the mountain ranges which divide North Carolina from Tennessee, it is in bloom before the autumn tints appear, and the leaves are very luxuriant and out of proportion to the mass of flowers. As the writer has seen it along the northern lakes at the end of August, the growth is reversed. The foliage is more contracted, and the bright blue of the flowers given a greater advantage; and which, among the orange and brown of ferns and falling tree leaves, scarlet sumachs, and yellow golden-rods, nature uses in her great autumn pictures to immense advantage. The Pennsylvania specimen used in our illustration is just between these two extremes, and gives an excellent idea of its average appearance. Beautiful as it is in nature, it is equally striking as a garden plant. It does very well under culture so long as the situation is not too much exposed to the hot sun. There are quite a number of shades of color among the garden varieties,—some believe them to be hybrids; and it appears, by a paragraph in the third volume of the *Botanical Gazette*, that hybrids may occur in nature. Mr. J. Schneck, of Mount Carmel, Illinois, there says:—"In addition to a red form differing in no respect but color, there is one which appears to be a hybrid between *Lobelia syphilitica* and *Lobelia cardinalis*. The leaves and calyx are nearly as hairy as in *Lobelia syphilitica*; bracts intermediate; the flowers have the slender tube and the aspect of *Lobelia cardinalis*, but broader at the mouth, and with more conspicuous folds in the throat, nearly as large as in *Lobelia syphilitica*. It has also the reflexed calyxes of the latter species, but they are very short. It grew in the midst of a patch of *Lobelia syphilitica*, in

COLOR PLATE
INTENTIONAL

a low, moist wood ; no plants of *Lobelia cardinalis* nearer than two hundred yards, at which distance there were several." In a note with this publication, another of Professor Asa Gray is attached in which he says he has examined the specimen, and has "no doubt" it is a hybrid between *Lobelia cardinalis* and *Lobelia syphilitica*. It is worth noting, however, that plants are often known to close observers to sport—as it is technically termed by cultivators—in many unexpected lines,—and one of these lines may as likely be occasionally in the direction of another species, as described. It does not therefore follow as a matter without doubt, that a form is a hybrid merely because it possesses intermediate characters ; and this is especially worth noting in an era when it is popular to believe that one form has grown out of another, and which might suggest a doubt whether the supposed hybrid might not be a return towards an original parental character. It will be thus seen in how many philosophical directions the studies of these abnormal forms may lead. They are, in these days, as welcome to the student of science as to the cultivator of rare plants.

In connection with these philosophical studies, it may be further noted that *Lobelia syphilitica* has been specially noted in relation to the cross-fertilization of flowers. Mr. Darwin notices in his "Cross and Self-fertilization in Flowers," how the Red Cardinal behaves. In the *American Naturalist* for January, 1879, Professor J. E. Todd notes of this species : "the corolla is monopetalous and two-lipped, the lower lip consisting of three petals and the upper of two. Between the latter is a slit extending to the base of the tube. The five stamens are free from the corolla and united, their anthers and upper parts of the filaments forming a tube ; or it may be said, the anthers combining, form a common cell for the pollen, which opens by a pore at the apex. On the lower margin of the pore are many short, stiff hairs, which at first project across the pore closing it, but when the pollen is ripe, they turn abruptly downwards and leave it open. There is only one pistil, which is armed near the end of the style with a collar of short, stiff hairs, similar in size and character to those on the anthers just mentioned. The end of the style with its hairs forms the bottom of the pollen-cell before described. We have therefore the stigma shut up with the pollen in the same cell. 'A capital arrangement for self-fertilization,' one says. Nay not too fast ! The stigma is composed of two fleshy lobes, its receiving surface being on their inner surface ; and they are firmly closed together, so that the end of the pistil looks like a closed mouth with its lips pressed together." He then proceeds to trace the subsequent behavior of the style, stamens, and bristles, showing how they cover with pollen insects entering the flowers, and how they cover the stigmas of other flowers after the "closed mouths" open.

Our Blue Cardinal derives its specific name from a great reputation it once obtained in Indian medicine. Pursh, who wrote his Flora of North America, in 1814, remarks that the plant possesses "great medical virtues," on account of which it was introduced into Europe nearly 200 years ago. In relation to this medical demand, Sir John Hill wrote to John Bartram, under date of December 6, 1766, as we see in Darlington's memorials : "There is wanted here, on a very particular occasion, four pounds of the root of *Lobelia syphilitica*, or the Blue Cardinal, dry'd, to be used as medicine. My Lord Bute has given me permission to desire you to send it over." It must, as Pursh notes, have been introduced into Europe very early, for we find it described as *Rapunculis Americanum*, in a work called "Memoirs for a History of Plants," published in Paris, by Denys Dodart, in 1676. Sir W. Johnson purchased the secret of its use from the Indians of Virginia in early times. They told him they made a decoction of the roots in three times the quantity of water. A portion was taken in the morning fasting and again in the evening. The dose was increased until the purging became too violent. Then, after a few days of rest, the doses would be resumed till a cure was effected. Whether the medicine which would help an Indian was wasted on an Englishman, is not clear ; but the historian says "its virtues have not been confirmed by any instances of European practice." The general belief now is that it has no merit which the *Lobelia inflata* does not possess to a greater degree.

EXPLANATIONS OF THE PLATE.—1. Full size specimen of a plant from Pennsylvania. 2. Shows the fringed and reflexed sepals. 3. Cross-section of an ovary, nearly mature.

WILD FLOWERS AND NATURE.

SPRING.

'Tis sweet, in the green spring,
To gaze upon the wakening fields around,—
Birds in the thicket sing,
Winds whisper, waters prattle from the ground,—
A thousand odors rise,
Breathed up from blossoms of a thousand dyes.

Shadowy, and close, and cool,
The pine and poplar keep their quiet nook,—
Forever fresh and full,
Shines at their feet, the thirst inviting brook,—
And the soft herbage seems
Spread for a place of banquets and of dreams.
—BRYANT.

THE EARLIEST BUTTERCUPS.—I have read your note on "Early Buttercups," in January number of MEEHANS' MONTHLY. In our local paper, the *Cheney Free Press*, issued January 1st, was the following item :

"A popular young lady is now all the more popular from bringing us a boquet of wild buttercups."

I called on the editor, F. G. Alexander, to learn the exact date, but he could not, at that moment, recall it. He said, however, that he saw buttercups that were gathered Christmas Day, in Hillyard (Spokane Co., Washington). The flowers were not open when gathered, but were placed in water, and they opened that day.

As the month of December was very mild, you will probably hear of numerous Christmas buttercups this year. Perhaps I should mention that the early flowering buttercup of this region is *Ranunculus glaberrimus*.

Cheney, Washington. SUSAN TUCKER.

PLANTS IN STRANGE PLACES.—In many years of rambling through the woods, I have noticed many plants that were far from home, at least they were away from their common localities. *Rhododendron maximum* is found quite frequently along the valleys of the Delaware, Schuylkill and Susquehanna Rivers. In the pine barrens of New Jersey, however, it is unknown ; yet right in the heart of an immense cedar swamp, on a branch of the Egg Harbor River, quantities of them may be found. Some of them have attained great size.

Pluchea camphorata is almost exclusively a salt marsh plant, and, previous to this summer, I have never collected it in any other location. In 1895, a very large area of swamp land in the upper part of Atlantic County was completely burned, and among the new growths this summer, *Pluchea camphorata* was quite common. I have never collected the plant within fifteen miles of this locality.

I have frequently found isolated plants of such as *Goodyera pubescens*, *Asplenium ebeneum*, *Aspidium spinulosum*, *Triosteum perfoliatum*, *Pinus Strobus*, *Pinus inops* and many others, miles away from their companions.

Hammonton, N. J. F. L. BASSETT.

ERYTHRONIUM MESACHOREUM.—Prof. E. B. Knerr figures and describes in the June number of the *Midland*, a new Dog-tooth Violet, under the name of *Erythronium mesachoreum*. It is closely related to the common white Dog-tooth Violet of that section, *Erythronium albidum*. Mr. Knerr, however, considers it sufficiently distinct from that species to deserve a distinctive name.

A LARGE WISTARIA.—In a yard at Tenth and King Streets, in Wilmington, Delaware, is a vine of *Wistaria sinensis*, which measures (one foot from the ground) three feet eleven inches in circumference. It may not be the largest, but it is the largest I have seen.

Wilmington, Del. EDW. TATNALL.

NOTES ON MOUNT TACOMA.—There are comparatively few regions where one can see as wide a range of flora as that seen between the city of Tacoma and Mount Tacoma. In the space of forty to sixty miles, the tourist passes through from the sea level to regions of perpetual snow, with its crashing avalanches and slowly moving glaciers eroding deep valleys and bearing loads of rock and volcanic material past natural gardens covered with all kinds of

beautiful alpine flowers. He passes from regions of dust and heat through tall forests of valuable timber until he gradually emerges into the foot hills of the mountain, where he finds the dust and heat of summer have been replaced by a mild and congenial spring climate. He now may select the climate and environment that is most pleasing to him and there pitch his tent amid the tall waving grass sheltered here and there-by small clumps of Balsam Fir. He may drink the sparkling water from the numerous streams that hasten down the mountain side to form the raging torrent. Here he is remote from the busy scenes of every-day life. Here the mountain looks defiantly down upon him. He listens to the wild voices of the mountain. He admires the picturesque grandeur that everywhere surrounds him, and feels a reverence for Him who formed the mountain and thus clothed it with such beauty. Silence itself has a peculiar charm as he sees nothing but nature's handiwork wherever his eye chances to fall.

It does not seem possible that one could drive through such a variety of scenery in the short period of two or three days. One is naturally led to ask "why is there such a change?" Variation in climate brought about by a change in altitude is the answer. Since we find both soil and climate different, we easily account for the peculiar forms of plant life that are indigenous to such wild districts. The plants with which we are familiar, here near the sea level, either entirely change or in the fierce struggle for existence become so dwarfed and modified as to be no longer identified by the careless observer. It is interesting to observe some of the noticeable changes that plants in general undergo in this rigorous climate.

In the first place, the plants as a rule are dwarfed and send thick rootstocks deep into the crevices of the rocks where they are enabled to withstand the severe cold and frost—not only of winter, when they are buried deep in the snow; but the frosty nights of mid-summer; for some of these grow where it freezes every night during the whole summer. Prominent among these are two plants of the mustard family. *Draba aureola* and *Smelowskia calycina* seem to vie with each other for the highest place, after they have left their more delicate competitors far below. The two are to Mt. Tacoma what the Edelweiss is to the Alps. Nature has clothed these hardy plants with a woolly or pubescent garment to further enable them to survive. We also notice that the plants are more leafy. Often the leaves form a mat at or near the root; while the flowers are highly-colored. This latter fact is quite noticeable to one living on Puget Sound, where, owing to the mild, moist climate, there are comparatively few highly-colored wild flowers. There is also a marked difference in the way that flowers spring forth and hasten on to maturity. Many peer up through the snow in bud and are in full blossom about the time that the snow has disappeared. Noticeably among these are the little yellow buttercup (*Ranunculus Suksdorfii*), the Western Anemone (*Anemone occidentalis*) and the white and yellow deertongues (*Erythronium montanum* and *E. grandiflorum var. parviflorum*).

Here nature has made provision for the shortness of the season in that plants start at a lower temperature. This same thing has been observed oftentimes by those who have travelled in different parts of the world. The plants of northern countries, where the winter is long and intensely cold, spring up at a much lower temperature than they do in the South, where their environment is totally different. We find the same species of plants around this mountain that are usually found in the Arctic regions. Since the conditions are somewhat similar this naturally follows. A visit to this mountain then is about equal to a visit to Alaska or to the Alps.

Geologists account for the distinct groups of wild flowers on mountain peaks on the theory that during the glacial period, when the ice-cap moved over the surface of the northern part of North America, flowers were carried from the north with the moving ice. These were stranded after the ice-cap receded and survived on the mountain sides; and, as the climate became warmer, they gradually withdrew higher up the mountains, where the climate is still congenial to them. As these hardy forms of vegetation withdrew to the mountains, so with these withdrew also a peculiar fauna, some of which are being rapidly exterminated—as for example, the mountain goat and the ptarmig are on this mountain.

Tacoma, Washington. J. B. FLETT.

BLUE PRINTS OF FLOWERS.—I note in your December issue, page 224, an article referring to the blue printing of ferns.

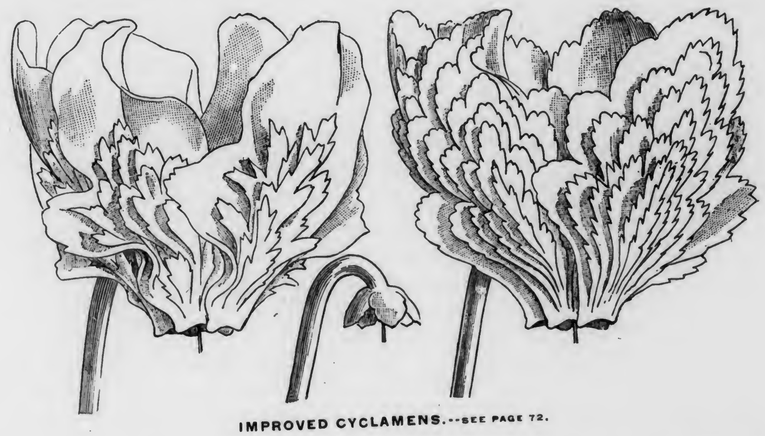
As I have during the past season made blue prints of forty or fifty varieties of grasses (which I shall be glad to send for your inspection if you wish to see them), I may be able to make some suggestions additional to those given. And, first, I would get the prepared paper from a mathematical instrument dealer, such as Queen & Co., or Weber in Philadelphia, instead of from dealers in photographic supplies. The photographic paper is finer for pictures but no better for this class of work. It can be obtained in ten-yard rolls, 30 inches to 42 inches wide, for 75 cents to $1.25 per roll, according to width and quality. It can be handled for cutting and preparing to print in diffused daylight, such as a room with shades drawn, without injury.

Good prints can only be made from 9 o'clock to 3 in winter, or from 8 to 4 in summer. The printing should be timed, as with some of the best papers there is no marked change of color when the proper exposure has been made. In summer, with a direct sun, three to five minutes at noon, or double that time at the earlier and later times mentioned, should give excellent results. In winter, these times would be nearly doubled. Prints can be made in cloudy weather if the clouds are not too thick, the exposure required being from 15 to 40 minutes.

Good prints cannot be made through window glass, inside a room. A printing frame is by no means a necessity. A wide board, as large as it is desired to print, a glass of the same size, a blanket or several thicknesses of flannel of the same size, and four clamps which can be obtained at hardware stores for ten cent a pair, will answer every purpose. Lay the blanket on the board, then the paper—prepared side up, then the object to be printed and lastly the glass. Clamp over a narrow strip of wood just sufficiently to secure contact at all points, expose until printed, wash thoroughly, and pin up on a line to dry.

ELLIS B. NOYES.

Portsmouth, Va.



IMPROVED CYCLAMENS.—SEE PAGE 72.

NATURAL INARCHING.—Noticing in one of your back numbers mention made of natural grafting, reminded me of an occurence which came under my own observation, and which astonished me greatly.

I was having some of the common wild running roses dug when I found to my surprise a rose and a Green Brier (frequently called bramble here) growing out of the same root.

Henderson, Ky. GEO. M. ALVES.

Cases such as these are referable to enfolding rather than inarching. The stronger growing overlaps and finally encloses the weaker one pressing against it. If the attachment were cut away, the portion enclosed would not live on the other as in actual grafting or inarching.

USE OF VARIATION IN NATURE.—In a note in the MONTHLY some time ago, you stated, I think, that it was not known that the flattening of the petioles in *Populus tremuloides* and some other poplars subserved any useful purpose; and that this peculiar modification of structure (as well as many others) was probably brought about, so to speak, for the mere sake of variety.

This subject was just now brought to mind by reading the following words of Dr. Asa Gray, written long before his death: "Hereafter teleology must go hand-in-hand with morphology; functions must be studied as well as forms, *and useful ends presumed, whether ascertained or not, in every permanent modification of every structure.*" (Italics mine.) Does not this "doctrine" apply well to the case in question? F. N. TILLINGHAST.

Greenport, N. Y.

Not necessarily does this doctrine apply. A useful end may be presumed from a petiole,—but the variation in the form of the petiole may yet be for mere variety sake. We may infer that a mouth serves the useful purpose of aiding the animal in eating, breathing, or making sounds; but the large mouth or the small mouth, the thick lip or the thin lip, the cherry lip or leaden lip, can serve no other purpose than to furnish the variety essential to the distinguishment of one individual from another.

Individual variation is one of the essentials to the present order of things. When we say such and such a form is for mere variety sake, we must not forget that variety has its own wise purposes.

SUDDEN APPEARANCE OF PLANTS.—Can you, or any of the readers of the MONTHLY, tell why Erechtites, or Fire-weed, comes up the first year after cutting off a piece of woods? Whence comes the seed, and why has it remained so long dormant? This Fire-weed is killed off by the frost, and is followed the second year by Garget or Poke-root, and wild raspberries. H.

Waterbury, Conn.

It has been proved that seeds will retain their vitality for a long period in the earth under special conditions, and occasionally the appearance of plants may be accounted for by the fact of such seeds getting under atmospheric conditions favorable to vegetation. But this is not the case with the Fire-weed, and plants which appear in great numbers where forests are burned or cleared away. These plants are to be found in the forests before the clearing occurs, but so small that they escape observation. A perfect plant, flowering and seeding regularly every year, may not be more than an inch or two high. If any one will examine a forest which may be still uncleared, near to one cleared, and on which these plants are noticed, they will be found in the depauperate condition described. They are observed after fires simply because of the full supply of food in which they flourish,—they become so vigorous as to intrude on general attention.

A POCKET MANUAL OF BOTANY.—Mr. Saunders' experience with the Catbriers (see February MONTHLY) is not only amusing but also indicative of a need which, doubtless, has long been felt by field-botanists, viz: The need of a flora of a size convenient to carry in the pocket, a "manual" in fact as well as in name.

The Catbriers were not so much to blame as the book-makers. If the Gray's Manual had not been so bulky, it could and should have been in Mr. S's pocket, "out of the reach" of the mischievous briers, and not tumbling about.

Mr. Chapman, of the American Museum of Natural History, New York City, has given us a Handbook of Birds of Eastern North America, which, bound in flexible morocco covers, is "just the thing" for the pocket of the ornithologist in the field. Why does not some one give us a "Handbook of Plants" of the North Eastern States, of a suitable size for the pocket of the botanist?

It is true the number of plants is several times greater than the number of birds, but the descriptions of the plants need not be nearly so extended as are the descriptions of the birds in Chapman's Handbook.

Greenport, N. Y. FRANK N. TILLINGHAST.

PRIMULA OBCONICA.—A number of observers contend that the pretty primrose, *Primula obconica*, does occasionally irritate the hands to such an extent that the plant may be classed with the poisonous ones. Mr. C. F. Saunders brings the matter again to our attention.

GENERAL GARDENING.

SPRING IS COMING.

Mark ye, how the flow'rets blow!
Feel ye, how the sun doth glow!
Spring descends, with youth bedight,
Passing on from vale to height.
Hues more splendid Nature takes,—
Lo! to life once more she wakes,—
And the gentle balmy wind
Time of fragrance brings to mind.
—*Feast of Adonis.*

HEDGES BARE AT THE BASE.—A correspondent enquires the cause of loss of foliage near the ground from a Hemlock Spruce hedge. Without knowledge of the particular hedge in question, the cause may be assigned to one of several things. Either it is injured by something—perhaps a mowing machine run too close in order to avoid a use of the sickle or scythe; or the trimming is improper—the hedge rounded instead of trimmed to a conical form with breadth at the base, permitting the entire foliage to have light, which Hemlock needs; or the soil is too dry and poor. Where the latter cause is evident, the soil should be worked at once, well-rotted stable manure being forked in around the roots. A thick layer on the surface will serve to retain moisture during the summer or protect the young rootlets with its warmth during the winter.

BASKET WITH POINSETTIA PULCHERRIMA TWIGS.—Arranged by W. E. Marx, court dealer in flowers in Vienna, Austria.

Calling, last September, at Mr. Marx's new establishment, I was favorably impressed by the new culture of Poinsettias. They are cultivated here with great care and the best of success, especially resulting in long-stemmed sections for bouquet purposes. While most of the plants usually seen are in low and many branched specimens, Mr. Marx's ranged from ½ to ¾ of a meter in height.

As a rule, the plants are seen in comparatively small pots, ranging from one to three in a pot. Experience has shown, as the most successful rule for the culture, either to not cut back at all, or only sparingly on vigorous plants, because the finest foliage, as well as the largest and brightest colored flowers, will be produced by this treatment. In Marx's establishment, full-leaved Poinsettia branches of 1½ meters length, are cut, and any man in the profession (Fachmann) will easily conceive the value of this most impressive means in aiding decoration.

The construction of the basket bears conclusive proof of the usefulness of long-stemmed Poinsettias. Mr. Marx cultivates them in large numbers. At my visit, there were over 2000 of them nearing flowering. The period for flowering begins with November, extending to New Year's, and every flower-grower, at first sight, will be impressed by the remunerative importance of long-stemmed Poinsettias for bouquet purposes.

Translated from Möller's German *Garten Zeitung*, by H. Cramer.

BASKET OF POINSETTIAS.

CHRYSANTHEMUMS.—I have read with interest about growing Chrysanthemums in boxes. I tried the system the past summer and find it very satisfactory. The boxes were 22 inches long, 14 inches wide and 5 inches deep, holding six plants. Cuttings were taken in May, grown on, pinched once to make three stems and planted from 4 inch pots into boxes in July.

To cover the open seams in the bottom, I used fresh sods, grass side down and filled up with ordinary good soil. The Chrysanthemums were grown out-of-doors all summer, and last week in September moved into a cold pit, where they opened to perfection.

I find the plants grow healthier, require less staking and handling, than under the old way of growing in pots. GARDENER.

TRANSPLANTING EVERGREENS.—There is a saying among horticulturists that evergreens are better transplanted late in the spring than earlier. It is true that, as a rule, evergreens can be transplanted much later than deciduous trees; but it is not correct that they are more successful when planted late than when given an early chance. Indeed, most kinds of evergreens, especially of the family of the true pines, cannot be planted too early in the season. The larch is not a pine, although of the coniferous family, and this especially demands early planting.

THE GOLDEN-GATE PARK,—PINUS INSIGNIS.—In the December number, M. H. Dunn is credited with being superintendent of Golden-gate Park, San Francisco. Mr. John McLaren is, and has been for years, superintendent of this magnificent park, and deserves as much, if not more, credit than any park superintendent in the United States. The site of Golden-gate Park is exposed to the open sea, with the strong air currents of the Golden-gate continuously sweeping over it. The surface of the park is composed entirely of sand-dunes and shifting sea sand, for the most part incapable of supporting but the meagerest vegetation. The loose sand was held by coarse, clump grasses, Acacias, etc. Soil was then brought from a distance and distributed, and pines and Eucalyptus in variety planted. When these had formed sufficient shelter, they were gradually cut away to give place to regular park improvements. Golden-gate Park is to-day one of the horticultural wonders of the United States, and a source of great pride to San Francisco.

In regard to *Pinus insignis*, it is true that in a few decades it will cease to exist in a wild form, but vast numbers of the trees have been planted throughout the State and are growing luxuriantly. EMORY E. SMITH.

Palo Alto, Cal.

DEGENERACY IN BREEDS.—A Chicago correspondent says:—"A friend, to-day, in speaking of the trouble many are having with the aster disease (China Aster), advanced the theory that the present strains, having been in-bred and "improved" so much from the original *Callistephus Chinensis*, that it was a weakening or dying out of the species, and that we might eventually lose it. What say you?"

Some species of parasitic fungi will now and then find some species a capital host-plant, and extend itself rapidly on the individuals of the species. The spores are carried with the seeds or the plant to other localities, and in this way become so widely spread that numbers of sickly plants might create the impression that the race was dying out. Individuals of species not "improved" suffer this way, at times, just as badly as improved ones. We cannot therefore attribute the attack to degeneracy.

GETTING RID OF TREE STUMPS.—Referring to your note, "Getting Rid of Tree Stumps," in your January number, I give you here an easier way than you mention, and that is, to bore one or two holes in a stump, and then fill nearly to the top with common salt, then plug them up. In a few years they will sink out of sight. This will answer near houses, but far away from houses a half-stick of dynamite may be placed beneath a stump in a hole made by a crowbar, and a fuse attached or laid against the dynamite, then light it, and by the time sixty yards are covered the stump will be nowhere. F. K. STEELE.

Festus, Mo.

TALL DAHLIAS.—Dahlias have been known, under favorable circumstances, to reach a height of eleven feet; but about one-half of this is the height to which they usually grow.

LESPEDEZA BICOLOR.—SEE PAGE 74.
(Flowers rosy-pink.)

MEASURING THE HEIGHT OF TREES.—It is a very simple matter to get the height of a tree when the sun is shining. If a person five feet in height throws a shadow ten feet, he may be reasonably sure that a tree with a shadow of one hundred feet is fifty feet in height. Any school boy with the knowledge of arithmetical rules of proportion can get the height of a tree in this way, without difficulty.

SPRAYING FOR FLOWERS AND FRUITS.—Many who fail in perceiving any good results from spraying as a preventative against fungus parasites in flowering plants and fruit trees, fail through working too late It is too late when our first knowledge of the existence of the parasite is after it has induced disease in the plant. Some growers have found that it is not too early to spray with the fungicide even before the leaves push. The invisible spores from which these fungus parasites germinate are present long before they get an entrance into the structure of the plant. It is therefore good policy to commence to place them at the mercy of their destroyers before they have time to do the plant an injury. About two pounds of copper sulphate and fifty gallons of water is a very simple mixture with which to spray any plant, and in the majority of cases it will be effective without other material being mixed with it.

DESTRUCTION OF WEEDS.—It does seem humorous to have our National Government warning cultivators against this one weed and that one weed, with specific instructions for destruction in one case and in another, when the destruction of any one weed is the destruction of all. If it be an annual, do not let it make seeds,—if it be a perennial, do not let it make leaves. It is as well at times to "see ourselves as others see us," and in this case it has been thought as well to give the reader the following by a correspondent of the French *Lyon-Horticole*. It is amusing in many respects :—

"Two hundred bad herbaceous plants, and how to distinguish and destroy them.

"I beg you dear readers do not be frightened, continue to the end of the chapter, it shall be short. Do not think your humble servant may have an overweening desire to recite the litanies of botanists. . .

"Are you acquainted with the 'Yearbook of the Agricultural Department of the United States?'" It means the same thing—to my humble mind, for I have not the niceties of the English language Gladstone possesses,—it means the Annals of the Agricultural Department of the United States,—*Year* pronounced *yir*, meaning *année*, and *book* pronounced *buk*, meaning *livre*. Well! This Agricultural Yearbook informs us that if the Americans are the owners of very bad herbs introduced to the Old World, those kinds which multiply abundantly, as for example the Virgerette or Elodea, of Canada, Europeans are not to be found fault with for sending back numbers of bad plants to the New World. Let us look over these proceedings. Americans inform us then that more than half a hundred of our species have penetrated their different States.

"They complain of our *Saponaria officinalis*—that which is used as soap for washing certain goods—with invading New England and Illinois ; the large lance-leaved *Cirsium* (horse thistle) is a plague in Kansas and elsewhere ; the Black Mustard is spreading itself all over California ; that Cat-nip (*Nepeta Cataria*) is not rare in Michigan. They have the Dandelion, Hedge Mustard (*Sisymbrium officinale*), Dog's-tooth (*Cynoglossum*), Stonecrop—*Sedum Telephium*—which is intruding in New York and Pennsylvania,—Milk-thistle, Mouse-ear, Orange-colored Hawk-weed,—the latter is pointed out as being in Vermont and Ohio ; the reddish Brome is in Oregon and California. In Michigan they complain of the Round-leaved Mallow ; in North Carolina of the Perforated St. John's Wort ; Pennsylvania wishes to get rid of the filarious lettuce (Sow-thistle); Wisconsin and Oregon of the little Wood-sorrel (*Rumex Acetosella*); New Jersey and Georgia also wish to be disembarrassed with the Star-thistle (*Centaurea Calcitrapa*); in fact the greater part of United States complain of foreign herbage.

"It is true they complain also of their own. This is very interesting to us. Is it not amusing to see Yankee agriculturists point out to their compatriots methods for destruction, ways to evade propagating kinds which European horticulturists recommend as not adverse to culture? Is it not funny to hear them say : 'I beg you to tear out that *Abutilon*, that *Lobelia*, that *Passiflora* ; carefully scrape these Argemones ; do not leave a foot of *Phytolacca* in this place.' And that *Eichhornia crassipes* which is cradled in the Victoria bed in the Parc de la Tête d'Or, is *injurious*, which means pernicious, prejudicial in Florida and Louisiana!"

THE HOLY GHOST FLOWER. — A correspondent of a daily newspaper has the following to say about a curious orchid :

"A rare and beautiful flower is the *Peristeria elata*, or the Holy Ghost plant, which bears a white flower speckled with maroon, the perfect picture of a dove with extended wings and head bent forward, just in the attitude in which we are told the Holy Ghost descended on the Master's head, and, bending forward, looked into His face ; hence its name. It is not blooming this year, but you can see the picture of one of mine in 'Appleton's Cyclopedia.' It is a native of the far interior of Central America. The size of the flowers varies, the dove generally of the size of from a quarter to half a dollar, but it is as perfectly shaped a dove as you ever saw."

This orchid is not rare in greenhouses where orchids are cultivated, but it is not by any means a showy species. The plant has pseudo-bulbs about the the size of a goose-egg, with long, roughish, and somewhat narrow leaves. The stem of flowers is about two feet high, and bears but two or three of its singularly white, ivory-like flowers at a time. It is of very easy culture, and, we believe, not among the more expensive kinds.

TEAS' WEEPING MULBERRY. —The illustration is from a specimen of Teas' Weeping Mulberry grown on the grounds of Moses Paxson, Esq., Radnor, near Philadelphia, and cannot probably be excelled in beauty by any specimen elsewhere. It is a variety of the common Italian or Silk-worm Mulberry, *Morus alba*, and was first made known to lovers of beautiful trees by Mr. J. C. Teas, of Carthage, Mo., who may well be proud of having his name connected with such an interesting garden ornament. It has to be grafted on the common upright form of White Mulberry. The specimen is about 9 feet in height, and permits of room for six or eight adults with chairs within its drooping branches.

TEAS' WEEPING MULBERRY.

MEASURING THE HEIGHT OF TREES.—It is a very simple matter to get the height of a tree when the sun is shining. If a person five feet in height throws a shadow ten feet, he may be reasonably sure that a tree with a shadow of one hundred feet is fifty feet in height. Any school boy with the knowledge of arithmetical rules of proportion can get the height of a tree in this way, without difficulty.

SPRAYING FOR FLOWERS AND FRUITS.—Many who fail in perceiving any good results from spraying as a preventative against fungus parasites in flowering plants and fruit trees, fail through working too late It is too late when our first knowledge of the existence of the parasite is after it has induced disease in the plant. Some growers have found that it is not too early to spray with the fungicide even before the leaves push. The invisible spores from which these fungus parasites germinate are present long before they get an entrance into the structure of the plant. It is therefore good policy to commence to place them at the mercy of their destroyers before they have time to do the plant an injury. About two pounds of copper sulphate and fifty gallons of water is a very simple mixture with which to spray any plant, and in the majority of cases it will be effective without other material being mixed with it.

DESTRUCTION OF WEEDS.—It does seem humorous to have our National Government warning cultivators against this one weed and that one weed, with specific instructions for destruction in one case and in another, when the destruction of any one weed is the destruction of all. If it be an annual, do not let it make seeds,—if it be a perennial, do not let it make leaves. It is as well at times to "see ourselves as others see us," and in this case it has been thought as well to give the reader the following by a correspondent of the French *Lyon-Horticole*. It is amusing in many respects :—

"Two hundred bad herbaceous plants, and how to distinguish and destroy them.

"I beg you dear readers do not be frightened, continue to the end of the chapter, it shall be short. Do not think your humble servant may have an overweening desire to recite the litanies of botanists. . .

"Are you acquainted with the 'Yearbook of the Agricultural Department of the United States?'" It means the same thing—to my humble mind, for I have not the niceties of the English language Gladstone possesses,—it means the Annals of the Agricultural Department of the United States,—*Year* pronounced *yir*, meaning *année*, and *book* pronounced *buk*, meaning *livre*. Well! This Agricultural Yearbook informs us that if the Americans are the owners of very bad herbs introduced to the Old World, those kinds which multiply abundantly, as for example the Virgerette or Elodea, of Canada, Europeans are not to be found fault with for sending back numbers of bad plants to the New World. Let us look over these proceedings. Americans inform us then that more than half a hundred of our species have penetrated their different States.

"They complain of our *Saponaria officinalis*—that which is used as soap for washing certain goods—with invading New England and Illinois ; the large lance-leaved *Cirsium* (horse thistle) is a plague in Kansas and elsewhere ; the Black Mustard is spreading itself all over California ; that Cat-nip (*Nepeta Cataria*) is not rare in Michigan. They have the Dandelion, Hedge Mustard (*Sisymbrium officinale*), Dog's-tooth (*Cynoglossum*), Stonecrop—*Sedum Telephium*—which is intruding in New York and Pennsylvania,—Milk-thistle, Mouse-ear, Orange-colored Hawk-weed,—the latter is pointed out as being in Vermont and Ohio ; the reddish Brome is in Oregon and California. In Michigan they complain of the Round-leaved Mallow ; in North Carolina of the Perforated St. John's Wort ; Pennsylvania wishes to get rid of the filarious lettuce (Sow-thistle); Wisconsin and Oregon of the little Wood-sorrel (*Rumex Acetosella*); New Jersey and Georgia also wish to be disembarrassed with the Star-thistle (*Centaurea Calcitrapa*); in fact the greater part of United States complain of foreign herbage.

"It is true they complain also of their own. This is very interesting to us. Is it not amusing to see Yankee agriculturists point out to their compatriots methods for destruction, ways to evade propagating kinds which European horticulturists recommend as not adverse to culture? Is it not funny to hear them say : 'I beg you to tear out that *Abutilon*, that *Lobelia*, that *Passiflora* ; carefully scrape these Argemones ; do not leave a foot of *Phytolacca* in this place.' And that *Eichhornia crassipes* which is cradled in the Victoria bed in the Parc de la Tête d'Or, is *injurious*, which means pernicious, prejudicial in Florida and Louisiana!"

THE HOLY GHOST FLOWER. — A correspondent of a daily newspaper has the following to say about a curious orchid :

"A rare and beautiful flower is the *Peristeria elata*, or the Holy Ghost plant, which bears a white flower speckled with maroon, the perfect picture of a dove with extended wings and head bent forward, just in the attitude in which we are told the Holy Ghost descended on the Master's head, and, bending forward, looked into His face ; hence its name. It is not blooming this year, but you can see the picture of one of mine in 'Appleton's Cyclopedia.' It is a native of the far interior of Central America. The size of the flowers varies, the dove generally of the size of from a quarter to half a dollar, but it is as perfectly shaped a dove as you ever saw."

This orchid is not rare in greenhouses where orchids are cultivated, but it is not by any means a showy species. The plant has pseudo-bulbs about the the size of a goose-egg, with long, roughish, and somewhat narrow leaves. The stem of flowers is about two feet high, and bears but two or three of its singularly white, ivory-like flowers at a time. It is of very easy culture, and, we believe, not among the more expensive kinds.

TEAS' WEEPING MULBERRY.—The illustration is from a specimen of Teas' Weeping Mulberry grown on the grounds of Moses Paxson, Esq., Radnor, near Philadelphia, and cannot probably be excelled in beauty by any specimen elsewhere. It is a variety of the common Italian or Silk-worm Mulberry, *Morus alba*, and was first made known to lovers of beautiful trees by Mr. J C. Teas, of Carthage, Mo., who may well be proud of having his name connected with such an interesting garden ornament. It has to be grafted on the common upright form of White Mulberry. The specimen is about 9 feet in height, and permits of room for six or eight adults with chairs within its drooping branches.

TEAS' WEEPING MULBERRY.

INTENTIONAL SECOND EXPOSURE

HARDY FERN GARDENS.—In very small yards, it is is difficult for the lover of flowers to get much permanent satisfaction. Flowering plants of all kinds require more sunlight than some of the small yards afford. Besides the want of sunlight, almost all like to have a tree or two, if only for the beauty which the tree affords. This shade is also against the successful culture of flowering plants ; but in such localities ferns usually find their choicest homes. A few rocks or stones in an elevated position, in some neglected corner, can be arranged, and the hardy ferns planted among them. Here they will continue for many years without any special care, and indeed they usually throw up stronger and more luxuriant fronds, after being in that place for a few years, than when they are first introduced. Common ferns found in the nearest wood will often make ornaments in these small yards, which the owners eventually highly appreciate.

NOTES ON ORCHID CULTURE.—E. O. Orpet, writing to *Garden and Forest*, gives the following useful hints on the cultivation of orchids:

"A point to be observed, and the most important of all, is to suspend the plants where they never will be watered or sprayed over the foliage. However they may be placed in a wild state, whether in clefts or fissures of the rocks, or if the moisture is rapidly evaporated by the air., certain it is that we must not apply it overhead. It is an easy matter to use pots of exactly the same height, putting several of them together in a basket and dipping them in a vessel of water when dry; no danger of decay at the base of the leaves need then be feared. It is the only difficulty to be apprehended, and one, too, that has prevented many from taking up the cultivation of this exquisite set of plants.

"Plants newly received have most likely come by way of Europe, and our experience, which is also that of others, is that thrips are very certain to be present. These destructive little pests seem inseparable for some time because water cannot be applied so freely as with our species. Strong tobacco dust, a pinch in each growth, will discourage them in time, and fumigating may also be resorted to, as this whole family will not take harm from the operation.

"It is not too much to say that *Cypripedium bellatulum* at least should be grown in every collection, however small. It is also the easiest to obtain, presents great variety in itself, both in the leaves and flowers, and will almost surely lead one to want other species, as they present, when altogether, a series of graduates that point to one common origin. Some are insular, while others grow on the mainland far in the interior. The gem of the series is a spotless form of *C. bellatulum*, discovered by Commissioner Moore, who also found *C. Charlesworthii*. The foliage is also devoid of color other than green, and this fortunately led to its being kept separate by its discoverer.

"Chemical fertilizers for orchid culture is a delicate subject, and many cultivators denounce their use in strong terms. We have, however, for some time used them in homœopathic doses, and in some instances with surprising results. We have no hesitation at this time in saying that a little nitrate of soda or sulphate of ammonia, or, better still, both alternately used as a weak solution for watering, will give depth of color to the leaves and vigor not to be had under other treatment. This is mentioned for the purpose of experiment by cultivators of an inquiring turn, rather than by way of refutation of the published opinions of other cultivators."

NEW OR RARE PLANTS.

IMPROVED CYCLAMENS.—The London *Gardeners' Chronicle* gives an illustration, presented on page 65, of a new race of Cyclamens, with crested petals, and observes :

"The strains and races of Cyclamen, which form so beautiful a display at this season of the year, are all the result of variation under cultivation of one species, *C. persicum ;* so that in this case the 'improvement' cannot be attributed to cross-fertilization. Lately, there have been fresh departures from the type which bid fair to be the forerunners of different forms, and are thus of great interest to students of evolution, as well as to florists. Whatever we may think of them now from the æsthetic point of view, it is certain that they will develop into forms of greater beauty in the future."

They were produced by the London firm of Messrs. Low & Company.

A NEW VARIEGATED-LEAVED CANNA, "JOHN WHITE."—We are apprised of the introduction of a new variegated-leaved Canna under the name of "John White." The originator and introducer, after whom the plant is named, states that it is a chance seedling ; but it retains perfectly its character throughout, even down to the smallest seedling. It has been tested under glass and in the open, and in both cases the variegation is maintained, making it valuable for either outside bedding or as a decorative pot plant. The leaves when young are of a pale yellow, narrowly margined with dark red, the yellow surface being dashed and spotted with green. As they mature, the yellow is gradually lost and replaced with a deep suffusion of pink with an admixture of green, later becoming green and yellow. It is of dwarf habit, attaining a height of about three feet, and growing strong and vigorous. The flowers are not large, are bright scarlet, contrasting well with the foliage. Should it prove equal to its introducer's claims, it will be a valuable plant.

THE NEW CLIMBER, CASSABANANA.—For twenty-five years, I have found more pleasure, perhaps, in vines than in any other effort in horticulture. We certainly already have a large list of climbers, from the simple and long-known Morning Glory up to the more elaborate Cobæas, Clematises, Bignonias and the like. There are vines and vines, and doubtless it will yet be a long while before the list shall be regarded as completed. Every year gives some new addition to the list. The last to come under my observation is a vine given the common name of "Cassabanana," which the curator of the Kew Gardens, England, says, is entitled to the name *Secanus odoriferus*. It may be that a very few of your readers are familiar with the plant. I describe it briefly : Tender annual. A great climber. Started early as possible, under glass if practicable, in 60 to 90 days from setting out in warm, loamy soil, it will go to the third, fourth or fifth story of a building. For arbors, dead trees, fences, it is unsurpassed for screen purposes or to make unsightly objects appear pleasant to the eye.

The vine produces numerous "melons," 12 to 14 inches long and 3 to 4 inches in diameter when fully ripe, which is about the size of a full grown cucumber when "gone to seed." The ripe melons are the color of a plantain or "red banana." At a distance, it might readily be taken for a bologna sausage. These melons can be eaten as muskmelons. When fully ripe and mellow, makes a nice preserve or curry. Seeds very numerous and very much like those of a squash. From my own experience, I take it that it will come to be valued wherever it can be grown to maturity. Unlike the great majority of our decorative vines, its fruit is valuable for preserves even when only one-half or three-fourths grown.

SAMUEL A. COOK.

Milledgeville, Ga.

The plant referred to in the above communication is one of the ornamental gourd family. They are all of great interest to cultivators, and deserve much more attention than they generally receive. Mr. Cook has done good service in bringing forward the merits of the Cassabanana ; he must be mistaken, however, in his belief that the curator of Kew Gardens called it *Secanus odoriferus*. There is no genus of this name known to botanists. We do not know, at the present time, to what genus the common name Cassabanana is to be referred. This, however, is of no material interest to the lover of vines.

NEW OR RARE SHRUBS.—Visiting gardens about Boston, Mr. John J. Barker noticed the following on the grounds of Mr. Jacob W. Manning :

"*Spiræa arguta.*—A new Japanese species, among the earliest and best of new Spiræas.

Daphne Gwenkwa.—A deciduous species from Japan, with dense clusters of small intensely fragrant, lilac flowers. It can be highly recommended.

Berberis ilicifolia, the Holly-leaved Barberry, is a stronger grower than the Mahonia ; not quite so evergreen, but with a rich purple shading of foliage in the younger growth and a deep clear green with age. Seemingly quite hardy, this gives great promise.

Colutea purpurea is a notable improvement in flower over the old form of the Bladder Senna ; more prolific and richly colored.

Viburnum tomentosum cannot be too highly recommended as a large-growing shrub. Its great profusion of showy flat cymes of pure white flowers are well set off by its rich foliage."

YUCCA GLORIOSA.—There seems to be two forms, at least, of *Yucca gloriosa;* one flowering about mid-summer, and the other very late. The annexed illustration represents the late-flowered variety, which seems to be the one under general cultivation. It commences to bloom near Philadelphia about the end of September, and is fully open about the end of October. The one form which furnished this

YUCCA GLORIOSA.

picture was in bloom in the Meehan nurseries all of November. The plant has a main trunk of about 2 feet high, and is about 20 years old. The flowers have rarely escaped frost as they did the past season.

LESPEDEZA BICOLOR.—One of the most beautiful of all plants for our garden decorations introduced for many years, is one which was first made known to Americans by its being one of the many curious plants left behind by the Japanese on the conclusion of the great Centennial Exposition,—and which about the same time came to us from the Old World under the erroneous name of *Desmodium penduliflorum*. A bush but a foot or two high is a dense mass of rosy pink flowers,—so dense, indeed, that scarcely a leaf is visible. The illustration on page 69, while it gives an excellent idea of the number of flowers on the branches, does not convey a tithe of the gaiety the living plants present. The branches are reduced one-half from the natural size, but the two separate flowers will aid in realizing the living picture. The plant has a hard-woody character, as if disposed to be shrubby, and it is catalogued by nurserymen among the shrubs; but in Eastern North America, it dies back annually, as a perennial herbaceous plant.

It is so generally known as *Desmodium penduliflorum*, that it is found very hard to get it back to its proper name, *Lespedeza*. The genera are well distinguished by their seed vessels,—the latter having but one seed in a pod; while the former has a chain-like legume, breaking into sections at maturity.

THE HARDY FLOWER GARDEN.

THE DWARF SWEET PEA.—A correspondent of the London *Journal of Horticulture* claims that the Dwarf Sweet Pea, Cupid, has not been a success in Scotland. He contends that a Sweet Pea that has not tendrils to climb with is in the condition of a Cupid without wings, and a rather sorry subject to look at.

PHYSOSTEGIA VIRGINICA.—Among hardy herbaceous plants, the *Physostegia Virginica* is particularly desirable. It is found in some catalogues under the name of *Dracocephalum*. Not only is it a very showy hardy perennial, but it is one of those admirable kinds that are well able to take care of themselves. It has the singular character of permitting its flowers to be placed in any direction, without springing backwards; and this peculiarity is always interesting to children of small size, as well as to children of a larger growth.

HARDY GERANIUMS.—Every one knows the hardy Geranium, as it is grown in our gardens. These are improvements on the original introductions from the Cape of Good Hope. But there are large numbers of species of hardy Geraniums that do not need house culture,—that are, in fact, hardy herbaceous plants. They grow wild in the woods of Northern Europe, and some of them in the woods of the United States. One of these, *Geranium maculatum*, is a well-known wild flower growing in woods and thickets. It is a very ornamental plant for the flower garden. The European species are just as handsome; and, in fact, there is scarcely a species of the perennial Geranium family that is not ornamental, and well worth cultivating.

WILD FLOWERS IN GARDENS.—A few years ago, a new idea was introduced into horticulture, known as wild gardens. This simply means that certain flowers were to be permitted to grow wild, so as to imitate similar collections of beauty found in a state of nature. These wild gardens were of some extent, and would not be practicable in limited areas; but much could be done by allowing one or two species of plants to become, in a measure, wild. For instance, one may have a group of some half dozen trees, or perhaps less; and plant Snow-drops, Crocuses, Daffodils, Lilies of the Valley, or any similar plant that could take care of itself in partial shade, and leave them there to their own devices from year to year. Little permanent groups of this kind, suffered to take on a natural character, add very much to the pleasures of gardening.

HELENIUM STRIATUM.—Helenium striatum, referred to in your February number, will, I think, prove a lovely addition to autumn composites. A rich maroon red is the predominating hue of the flower, quaintly streaked with a harmonious shade of old gold yellow; whilst the plant is full, vigorous and an abundant bloomer. It first attracted my notice at Kew, where I saw it in flower a year ago last September, and, although in a general way striped flowers look rather bizarre and ineffective, there is a brilliancy and distinctiveness about this that will commend it to many. I have introduced it here and planted a group in one of the hardy flower borders, and if it flowers next year as it should, will send you some specimen sprays. A. HERRINGTON.

Madison, N. J.

FRUITS AND VEGETABLES.

FORCED TOMATOES.—It is extremely gratifying to the owner of a private greenhouse to be able to furnish his table with fresh tomatoes in mid-winter. Their culture is not difficult, and it affords much pleasure to one who is interested in watching their development. In their early stages of growth an average temperature of 60 degrees is sufficient; but later, after having been transferred to benches, the temperature may be raised about 10 degrees. If a little intelligent care be given in watering and pruning them, a bountiful reward may be reaped. The flowers do not fertilize themselves well, and it is best to have this work performed by hand.

Mr. Wm. Robertson, gardener for John W. Pepper, Esq., Jenkintown, Pa., had excellent success with his plants the past season, over two hundred fruit having been taken from six vines. The seeds were sown September 1st, and produced fruit November 25th. Lorillard was the variety grown, and it is considered the best for winter fruiting. The vines were pinched back a little above each blossom as it formed. A sample of the fruit, kindly sent the Editors the last week in January, by Mr. Robertson, testified to their excellent quality.

BRINGING PEAR TREES INTO BEARING.—Fruit trees of any kind frequently grow with great luxuriance. In this case they are usually unfruitful. No tree commences to flower and fruit until its vegetative exuberance has been somewhat checked. Those who understand the art of fruit culture thoroughly, can bring these wayward trees into a straighter line of duty by root-pruning them. It is effected by digging a trench around the tree and then filling it up again with the earth that has been thrown out. This cutting off the ends of the roots causes a check to the extreme vigor, and the result is the production of flowers instead of branches. The distance from the trunk that the trench should be dug will of course depend upon the age and size of the tree, as also on its ratio of luxuriance. The aim should be to dig so as to cut off about one-third of its roots. The pear, as well as other fruit trees, is particularly benefited by root-pruning. It can be carried out at any time during the fall or winter season.

YUCCA GLORIOSA.—There seems to be two forms, at least, of *Yucca gloriosa;* one flowering about mid-summer, and the other very late. The annexed illustration represents the late-flowered variety, which seems to be the one under general cultivation. It commences to bloom near Philadelphia about the end of September, and is fully open about the end of October. The one form which furnished this

YUCCA GLORIOSA.

picture was in bloom in the Meehan nurseries all of November. The plant has a main trunk of about 2 feet high, and is about 20 years old. The flowers have rarely escaped frost as they did the past season.

LESPEDEZA BICOLOR.—One of the most beautiful of all plants for our garden decorations introduced for many years, is one which was first made known to Americans by its being one of the many curious plants left behind by the Japanese on the conclusion of the great Centennial Exposition,—and which about the same time came to us from the Old World under the erroneous name of *Desmodium penduliflorum*. A bush but a foot or two high is a dense mass of rosy pink flowers,—so dense, indeed, that scarcely a leaf is visible. The illustration on page 69, while it gives an excellent idea of the number of flowers on the branches, does not convey a tithe of the gaiety the living plants present. The branches are reduced one-half from the natural size, but the two separate flowers will aid in realizing the living picture. The plant has a hard-woody character, as if disposed to be shrubby, and it is catalogued by nurserymen among the shrubs; but in Eastern North America, it dies back annually, as a perennial herbaceous plant.

It is so generally known as *Desmodium penduliflorum*, that it is found very hard to get it back to its proper name, *Lespedeza*. The genera are well distinguished by their seed vessels,—the latter having but one seed in a pod; while the former has a chain-like legume, breaking into sections at maturity.

THE HARDY FLOWER GARDEN.

THE DWARF SWEET PEA.—A correspondent of the London *Journal of Horticulture* claims that the Dwarf Sweet Pea, Cupid, has not been a success in Scotland. He contends that a Sweet Pea that has not tendrils to climb with is in the condition of a Cupid without wings, and a rather sorry subject to look at.

PHYSOSTEGIA VIRGINICA.—Among hardy herbaceous plants, the *Physostegia Virginica* is particularly desirable. It is found in some catalogues under the name of *Dracocephalum*. Not only is it a very showy hardy perennial, but it is one of those admirable kinds that are well able to take care of themselves. It has the singular character of permitting its flowers to be placed in any direction, without springing backwards; and this peculiarity is always interesting to children of small size, as well as to children of a larger growth.

HARDY GERANIUMS.—Every one knows the hardy Geranium, as it is grown in our gardens. These are improvements on the original introductions from the Cape of Good Hope. But there are large numbers of species of hardy Geraniums that do not need house culture,—that are, in fact, hardy herbaceous plants. They grow wild in the woods of Northern Europe, and some of them in the woods of the United States. One of these, *Geranium maculatum*, is a well-known wild flower growing in woods and thickets. It is a very ornamental plant for the flower garden. The European species are just as handsome; and, in fact, there is scarcely a species of the perennial Geranium family that is not ornamental, and well worth cultivating.

WILD FLOWERS IN GARDENS.—A few years ago, a new idea was introduced into horticulture, known as wild gardens. This simply means that certain flowers were to be permitted to grow wild, so as to imitate similar collections of beauty found in a state of nature. These wild gardens were of some extent, and would not be practicable in limited areas; but much could be done by allowing one or two species of plants to become, in a measure, wild. For instance, one may have a group of some half dozen trees, or perhaps less; and plant Snow-drops, Crocuses, Daffodils, Lilies of the Valley, or any similar plant that could take care of itself in partial shade, and leave them there to their own devices from year to year. Little permanent groups of this kind, suffered to take on a natural character, add very much to the pleasures of gardening.

HELENIUM STRIATUM.—Helenium striatum, referred to in your February number, will, I think, prove a lovely addition to autumn composites. A rich maroon red is the predominating hue of the flower, quaintly streaked with a harmonious shade of old gold yellow; whilst the plant is full, vigorous and an abundant bloomer. It first attracted my notice at Kew, where I saw it in flower a year ago last September, and, although in a general way striped flowers look rather bizarre and ineffective, there is a brilliancy and distinctiveness about this that will commend it to many. I have introduced it here and planted a group in one of the hardy flower borders, and if it flowers next year as it should, will send you some specimen sprays. A. HERRINGTON.

Madison, N. J.

FRUITS AND VEGETABLES.

FORCED TOMATOES.—It is extremely gratifying to the owner of a private greenhouse to be able to furnish his table with fresh tomatoes in mid-winter. Their culture is not difficult, and it affords much pleasure to one who is interested in watching their development. In their early stages of growth an average temperature of 60 degrees is sufficient; but later, after having been transferred to benches, the temperature may be raised about 10 degrees. If a little intelligent care be given in watering and pruning them, a bountiful reward may be reaped. The flowers do not fertilize themselves well, and it is best to have this work performed by hand.

Mr. Wm. Robertson, gardener for John W. Pepper, Esq., Jenkintown, Pa., had excellent success with his plants the past season, over two hundred fruit having been taken from six vines. The seeds were sown September 1st, and produced fruit November 25th. Lorillard was the variety grown, and it is considered the best for winter fruiting. The vines were pinched back a little above each blossom as it formed. A sample of the fruit, kindly sent the Editors the last week in January, by Mr. Robertson, testified to their excellent quality.

BRINGING PEAR TREES INTO BEARING.—Fruit trees of any kind frequently grow with great luxuriance. In this case they are usually unfruitful. No tree commences to flower and fruit until its vegetative exuberance has been somewhat checked. Those who understand the art of fruit culture thoroughly, can bring these wayward trees into a straighter line of duty by root-pruning them. It is effected by digging a trench around the tree and then filling it up again with the earth that has been thrown out. This cutting off the ends of the roots causes a check to the extreme vigor, and the result is the production of flowers instead of branches. The distance from the trunk that the trench should be dug will of course depend upon the age and size of the tree, as also on its ratio of luxuriance. The aim should be to dig so as to cut off about one-third of its roots. The pear, as well as other fruit trees, is particularly benefited by root-pruning. It can be carried out at any time during the fall or winter season.

INTENTIONAL SECOND EXPOSURE

PRUNING TOMATOES.—Discussion is prevalent, in market-gardening papers, as to whether there is any advantage in pruning tomatoes,—some contending that the fruit is better when many of the branches are thinned out, so as to admit light and air to the fruit; while others insist that ripening of fruit is a vital process in which light and air have little part. Again, others contend that by thinning out some of the branches, those which are left are rendered more vigorous, and that finer fruit will be the result; while the dissenting faction is persistent in declaring that the thinning out of the branches only tends to produce another and weaker crop, and that the tomatoes of these secondary branches are smaller and less toothsome than those under the other treatment. It may be noted that most of these arguments seem but theoretical. It would take careful experiments by judicious observers to properly settle the question. One thing is certain, that when more leaves are left on the plant than can have an opportunity to perform their functions, they are useless. A comparatively few, healthy leaves are of more benefit to the plant than a large number of sickly ones.

THE DEGENERACY OF THE STRAWBERRY PLANT.—Rich, level lands which do well with corn and weeds is a poor place to plant strawberry plants. Hilly land does better, in fact, is the best, and those slopes which face the southeast are the best and earliest. In my little patch of land, which is a short spur, it has exposures to the north, east and south. There is a difference of a week in the ripening of the same variety planted not twenty yards apart. I have a variety called the Ella, an hermaphrodite sort, which ripens a few days after the Michel's Early. I use this sort to fertilize the Shuster's Gem, and I have it planted both on the north and the southeast exposure. One reason for the seeming degeneracy of the strawberry plant is allowing the beds to become too old and the plants too much matted in the rows. When they are too thick (and if fine large berries be an object), a sharp hoe should be used amongst them and half of them cut out early in the spring. Some sorts, like the Ella, which is very prolific of runners, because they come too thick in the rows and did not produce fruit up to the standard in size, some one would say, "O! they are degenerating." Not so. Use the hoe freely, and give each plant which is left a chance. The Shuster's Gem is just the other way. They do not mat up like the Ella. Keep the weeds down, make yearly renewals and they would keep their place to the end of all time, provided a larger, handsomer and better berry was not grown. Why is it that new plants are originating all the time? These new plants which are continually coming in are not wildings—not self-sown seedlings. Men are working for dollars in this world. Men are originating them for the purpose of making money thereby. Men are always trying for something better and larger. The degeneracy of the strawberry plant has nothing to do with new varieties, for there is no degeneracy about them. But the growers are trying to find or originate a strawberry plant which will produce berries as large as an Emerald Gem Cantaloupe, and this is the reason, and the only reason, why so many new varieties are being grown. Even I, on my little hillside patch, have thirty-four new varieties which will fruit this season for the first time in their young lives. I am looking forward with much pleasure to their outcome. F. R. STEELE.

Festus, Mo.

THE HENRY PEAR.—Among the host of new fruits that are continually appearing before the public, new pears are not numerous; but a new one, called the Henry, has been introduced on the recommendation of the President of the Illinois State Horticultural Society. He says the pear resembles the Bartlett very much in shape, size and flavor; but is a winter pear. It is very rich in its yellow coloring. He describes it as being superior to any other winter pear with which he is acquainted.

RHUBARB.—This vegetable is not so often seen in the amateur's garden as it deserves to be. It is not only desirable for tarts and for stewing, but it makes an admirable preserve for winter use. It is propagated by dividing stocks. After it has been growing for a few years, there are a number of buds, and if each of these be separated from the parent plant, taking care to have a piece of root with the bud, one may soon have a good plantation from a single stock.

DWARF APPLE TREES.—The dwarf apple is obtained by grafting on the low bush species which is found wild in Russia. This is known as the Paradise apple stock. Apples grafted on this stock seldom reach a height of over 6 or ten feet. They are very beautiful ornaments in amateur gardens, but have not been found profitable from a marketable point of view. A first-class dwarf apple tree would be considered very productive to produce one-half bushel of fruit. Every now and then there seems to be a wave of experimenting with them by the market fruit grower. Just now there is a renewed attempt of this kind. It is possible that with great knowledge and skill in fruit culture, one might make them profitable. They can be planted, of course, much closer together than ordinary orchard trees are. With this knowledge and skill one might obtain 100 or 150 bushel of apples to the acre from such trees.

SHADE FOR ORCHARD TREES.—Nothing is more certain than that a high temperature in the earth is injurious to fruit trees. Earth exposed to the full glare of the sun will frequently, in the summer time, reach a higher temperature than the atmosphere. This is especially true where the earth is dark in color. Any one may test this with a thermometer buried slightly in the earth. This is the reason why some orchardists have preferred to have the surface clothed with grass. It must be remembered, however, that all these questions are complicated, and cannot be settled from any one point of view. Grass requires food as well as trees; and, if the ground is comparatively poor, the crop of grass will make it still poorer for the crop of trees. Other things being equal, the shade which grass affords under the trees, or the shade which any material may afford, is a decided benefit.

FIRE BLIGHT IN THE PEAR.—The Fire Blight disease is well-known in America. Very often, most of the branches of a tree will have their leaves turn black in a few days' time. If we examine closely, we find, that at the point where the disease apparently starts, the bark, for several inches, is entirely dead. From this fact, the inference is drawn that this fungus sends a species of fermentation through the sap of the tree, which causes a comparatively sudden death. This fungus has long been known to be the cause of the fire blight; but, so far as MEEHANS' MONTHLY knows, the exact species has not been determined by the microscopic botanists of this country. In the Old World, it has been identified as *Glæosporium fructigenum*. It is not very common there,—at least, not nearly so troublesome as it has proved to be in our country.

FRUITS AND VEGETABLES UNDER GLASS.—Again there has been a severe freeze in Florida, and again is brought to the attention of cultivators the desirability of growing fruits and vegetables under glass, with a view to profit. In many parts of the South, this method of cultivating fruits and vegetables is attracting profitable attention. In a recent issue of the *Southern Florist and Gardener*, Mr. Alexander Daily, of Knoxville, Tenn., gives a view of his Cauliflower house. No one can have such success as his, ever under the most favorable circumstances, with plants raised in the open ground. He can raise them to great profit; but he very properly remarks, as MEEHANS' MONTHLY frequently contends, that the profit, which others may reap in a different locality, depends entirely on the condition of the local market.

DESTRUCTION OF SCALE ON FRUIT TREE BRANCHES.—The writer has had eminent success in clearing trees of scale by the use of a wash or light painting of pure linseed oil. There are some who complain that injury has followed this application,—probably from the oil not being pure, but adulterated with mineral substances. It is said that ammonia is better, and perfectly safe. We would be glad to hear from any one who has actually made a test of this.

APPLE, GRAVENSTEIN.—The Gravenstein is one of the most popular apples in Germany. There, its eatable properties are said to be unexcelled. In America, it has never been popular, though in some parts of Canada it has a good reputation. Possibly it is a poor keeper, as specimens that fall in one's way, occasionally, seem to be as good as one can expect a first-class apple to be. It is a beautiful apple to look at.

BIOGRAPHY AND LITERATURE.

THE COMING OF SPRING.

"Then, after winter, came the genial spring,
That sends a thrill through heart and nerve and brain,
That makes the poor forget the bitter cold,—
The poor so poor with them all price is dead,—
That soothes away the sorrows of the heart,
That strengthens once again the noble soul
That in its labours for the right has failed,
That makes all men forget their brooding cares,
With influences magical and sweet."

—HOWARD WORCESTER GILBERT.

PROFESSOR HENRY HARTSHORNE.—Medical science, and, indeed, science, generally, has lost an able exponent in Dr. Henry Hartshorne, of Philadelphia, whose death occurred on the 7th of February, in Japan, in which country he had become particularly interested, this being his second visit there. He had especial eminence in physiological botany. He had a wide acquaintance with scientific men everywhere, and his loss will be generally deplored. He was in his seventy-fourth year.

HENRY M. ENGLE.—In the fruit growing department of gardening, Mr. Henry M. Engle, of Marietta, Pennsylvania, had a widespread reputation. In many respects, he might be classed as one of Pennsylvania's ablest men. His orchard was one of the finest, and it was regarded as a veritable encyclopœdia of all that concerned fruit culture. If the State was called on to make an exhibition of fruits in any part of the world, Henry M. Engle was the one first thought of to lend a helping hand. Indeed, his readiness to lend a helping hand to any undertaking for the benefit of humanity was a striking characteristic of the man. No one was ever heard to say anything but good of him. Few men have passed away who will be more missed than he. He was the founder of the Lancaster County Agricultural Society, the State Fruit Growers (subsequently known as the State Horticultural) Association, one of the early members of the American Pomological Society, and a man of commanding influence for good in many ways. He served in the State Legislature one term, and was a member of the State Board of Agriculture from its first creation till the day of his death, which occurred on the 7th of February, of pneumonia, in his 78th year. The family immigrated from Switzerland. His great grand-father was Ulrick Engle, whose son, Jacob Engle, founded the religious sect known as River Brethren, with which the grandson remained affiliated. He had been married three times, and was the father of seventeen children.

He will be long remembered by orchardists, through his being the first to move in extended chestnut culture. He was the first to recognize the merits of the variety known as the Paragon, which, through his efforts, is now being planted everywhere.

PRANG'S EASTER CARDS.—Lithography received its first great inspiration, as an American art through the efforts of L. Prang & Co., of Boston. Though to-day, much that is in the American trade is wholly or in part produced in Europe, the productions of L. Prang & Co., from designing to printing, are wholly American. Standing, as they do, among those ranked as eminent in any part of the world, Americans have reason to feel a national pride in their productions. They were the first to work up the pretty idea of Christmas and Easter cards, which have created pleasures of memory in many a distant home. The past issues are well-known—the series of the present year's Easter cards well maintain the character of those gone before. We have real Easter flowers illustrated,—lilies, daffodils, daisies, violets, forget-me-nots, and so on. But one of the prettiest, and one that we do not remember having been introduced before, is a series with the Iris, or Fleur de Lis, for the subject. It is certainly a masterpiece.

POTASH IN AGRICULTURE,—is the title of a pamphlet, published by the German Kali Works, No. 93 Nassau Street, New York, N. Y. This book is known to many of our readers from its first edition, published a few years ago. The second edition contains many valuable improvements.

Potash is undoubtedly one of the best of mineral fertilizers,—and the results of experiments, as given here, can not fail to be instructive. It is sent free by the publishers.

SWEET PEAS UP-TO-DATE,—by Rev. W. T. Hutchins; issued by W. Atlee Burpee & Co., Philadelphia.

That the dainty Sweet Pea is already recognized as one of the most popular flowers, is undeniable, as is the fact that it well deserves the honor awarded it. Either as a garden ornament, with its gaily-colored flowers well set off by the background of green, or as used in cut-flower bunches, is its delicate beauty and worth evinced. With increase of popularity arises the need of more general information on its culture,—and this is interestingly given by Mr. Hutchins in a form that is at once complete and condensed. Aside from the value of this little pamphlet, from a culturist's standpoint, the words of the author will doubtless awaken a lively interest in this flower in the hearts of those who have not yet made room for it.

The descriptive list of varieties included in this pamphlet enumerate 105 varieties, and the author with confidence states that "we are just coming into the best stage of Mr. Eckford's success."

HONOR TO PROF. SARGENT.—In the Old World, there has been established a Veitch Memorial Fund, held in trust by the Royal Horticultural Society, for the presentation of a medal, at stated times, to men who have distinguished themselves remarkably in the progress of horticulture. Last year, our own esteemed fellow-countryman, Prof. Chas. E. Sargent, was one of the recipients of this great honor. An especial point brought forward to support the award was his great services in establishing the famous Arnold Arboretum of Boston. Others were his books, "The Silva of North America," and "The Forest Flora of Japan;" his great services in the "Tenth Census of Trees of the North American Continent," and as editor of *Garden and Forest*, and the influence which he has had in calling attention to American forestry.

SENTIMENTS ON FLOWERS.—Mr. John A. Boyle writes:

"In looking over the *Brooklyn Eagle* of January 17th, I came across the accompanying clipping, and it so impressed me that I thought it worth cutting out and mailing to you, as you might think it worth reprinting in your magazine:"

"Was it not Henry Ward Beecher who called the flowers 'the children of God'? If not, was it not something similar?' C. L. H.

Answer. — Henry Ward Beecher was passionately fond of flowers and may, on some occasion, have said what our correspondent quotes, but we do not find it. Mr. Beecher is recorded as having spoken of flowers as follows:

'Flowers are the sweetest things that God ever made and forgot to put a soul into.

'Flowers are sent to do God's work in unrevealed paths and to diffuse influence by channels we hardly suspect.

'Flowers may beckon towards us, but they speak toward heaven and God.'

Wilberforce said: 'Lovely flowers are the smiles of God's goodness,' and Richter said: 'On the earth the Infinite has sowed His name in tender flowers.'"

PRONOUNCING NAMES.—I note what you say in the January number of the MONTHLY, page 19, and would suggest a most admirable Pronouncing Dictionary of the Ordinal, Generic and Specific names of many plants, by the Rev. Percy W. Miles, B. A. T. C. D., Senior Moderator and Gold Medalist of the University of Dublin., etc., is to be found in Division viii, Supplement, of the Dictionary of Gardening, edited by George Nicholson, A. L. S., curator Royal Botanic Gardens, Kew, assisted by many other scholars. It would be of great advantage to botanists, horticulturists and gardeners, if this were made more complete, and brought down to the present time by some one expert on the subject, and separately printed. It was published in 1889.

I would say that the words cited by your correspondent, page 19, *Eucalyptus*, *Dianthus* and *Ageratum* are from the Greek. *Eucharis* is a manufactured Latinized Greek word. The Greek is *eu* well, and *charis*, grace or beauty, it means really, "very graceful."

ISAAC MYER.

New York City.

GENERAL NOTES.

A LARGE LAND ASSOCIATION.—Mr. Andrew McNally, of the great firm of Rand & McNally, of Chicago, has bought four thousand acres of land in the County of Los Angeles, California, which is to be divided into parcels, with the pledge from each purchaser that it is to be his permanent home, and that he shall spend not less than $250,000,00 on the improvement of each plot. Fruit trees, especially those of the Citrus family, have been planted on the tract in large quantities.

A NEW PUBLIC PARK.—The movement for public parks and open spaces in the large cities of our country has progressed with rapid strides, during the past few years. In many cases, valuable tracts are donated to the city for park purposes. One of the most recent of these is a gift to the City of Los Angeles, California, of a tract of land known as the Cat Ranch, comprising over three hundred acres, lying just north of the city. This has been donated by Mr. Griffith J. Griffith, the owner, and the tract is valued at $200,000. We all hope to hear more of these instances of public spirit in our large cities. A gift of this kind is a blessing, not only to this generation, but to generations still unborn.

TRADE DECEPTIONS.—A company which professed to sell an article manufactured from figs recently applied to the courts for protection from the infringement on their trade-mark by other persons. During the trial, it came out that the fig in no way entered into the manufacture of the article. The judge decided that this was evidently intended as a deception of the public, and the plaintiff lost the case. If this decision could be more broadly applied, it would be no injury to respectable horticultural tradesmen.

INARCHING OF TREE BRANCHES. — Near my home, in Foxborough, Mass., there is by the roadside just such a twin curiosity as the one described as growing at Dallas, Tex., with this difference: the cross-bar connects two sections of the forked tree, instead of two trees. The bar doesn't seem to have been a "branch" properly so-called; it looks more as if a piece of live wood had been fixed like a seat in the fork, and had grown to be a part of the tree.

Another interesting feature of this oak is the presence, in its trunk, about 2 feet from the ground, of a stone about a foot in diameter. This stone is now almost enclosed by the wood.

FRANKLIN CLARKIN.

New York.

But the cross-piece was originally a branch from one sub-trunk, pressing against the opposite one. After inarching, the end became broken off, and then the tree grew over the apex,—or the point of the cross-piece ascended upwards and became a portion of the trunk, only an examination could solve the question. If the latter case proves to be the fact there should be two leaders at some considerable distance above the base of the union, and the trunk should be larger above than below.

THE GARDEN OF THE POPE.—The London *Journal of Horticulture* gives the following account of the habits of the Roman Pontiff:—"At twelve, the present Pope takes his simple repast, after which he is carried in a portantina of red silk, by two bearers, into the garden, where he enters his carriage and drives down the alleys of Oaks and Ilex trees, escorted by an officer of the Noble Guards and two gendarmes. His Holiness inspects the fine vineyard, in which he takes more real interest than in all the fine marbles of the Vatican, and which yearly yields 8000 litres of excellent wine. The principal relaxation of His Holiness consists in cultivating tea roses."

NEMOPHILA MENZIESII.—Mr. C. G. DuBois tells the *Asa Gray Bulletin*, that the common name of the *Nemophila Menziesii*, in some parts of California, is Baby Blue Eyes. All the Nemophilas are pretty garden ornaments.

SITUATIONS WANTED

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENERS:—We shall be glad to furnish names of competent gardeners adapted to large or small places. Gardeners wishing situations should correspond with us. THOMAS MEEHAN & SONS, Nurserymen, Germantown, Philadelphia.

GARDENER—Situation wanted as gardener and florist, by single, middle aged man. Thoroughly experienced in growing flowers, fruits and vegetables. For further information address L. Beiderman, Huntsville, Ala.

HEAD GARDENER—Position wanted on private place by practical Scotchman, 30 years old, married, no children, thorough experience in every branch. Highest recommendations. Address, W. A., care of MEEHANS' MONTHLY.

GARDENER.—Scotchman, age 34, married, one child. Thorough practical experience in every branch of gardening and estate management. Excellent references. Address, W. L P., care of MEEHANS' MONTHLY.

GARDENER with first-class references, has charge now at a gentleman's place of 25 acres-lawn, 6 acres vegetables gardens, 12 greenhouses, 28 years' experience in Europe and this country, wants to change his place. "A Z." Office, MEEHANS' MONTHLY.

GARDENER.—Situation wanted by a young man thoroughly experienced in all branches. Married. no children. excellent references
Address E. G., Box 366, Mamaroneck, New York.

GARDENER.—Scotchman, 28 years, married, no children, experienced in every branch, desires position. Address, T. B., care Thomas Meehan & Sons.

GARDENER.—Gardener 47 years old, married, grown children, with life experience in every branch, wants situation. Finest reference. Address, T. H. G., care Thomas Meehan & Sons, Germantown, Pa.

FOR SALE OR RENT.—Florist and nursery establishment, best location near Cincinnati. Can be let in two parts. Nursery 40 acres, and more if needed, stocked with marketable ornamental and fruit trees. Greenhouses, newly built of swamp cypress, 8,000 square feet of glass, water heated, modern ventilated, water tower and steam pump. Dwellings eight rooms, frame; stables, carriage houses, etc For particulars apply to "F. P.," care MEEHANS' MONTHLY.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of **Rare and Beautiful California Novelties. Many New Begonias. New Cosmos, Rare Cacti, etc.** Offered by no others.

Ventura-by-the-Sea, Cal.

Corn

is a vigorous feeder and responds well to liberal fertilization. On corn lands the yield increases and the soil improves if properly treated with fertilizers containing not under **7% actual**

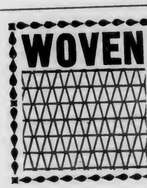
Potash.

A trial of this plan costs but little and is sure to lead to profitable culture.

All about Potash—the results of its use by actual experiment on the best farms in the United States—is told in a little book which we publish and will gladly mail free to any farmer in America who will write for it.

GERMAN KALI WORKS,
93 Nassau St., New York.

WOVEN WIRE FENCE



Best on Earth. Horse-high, Bull-strong, Pig and Chicken-tight. With our DUPLEX AUTOMATIC Machine you can make 60 rods a day for 12 to 20 cts. a Rod. Over 50 styles. Catalogue Free.
KITSELMAN BROS.,
Box 66. Ridgeville, Ind.

Seeds! Seeds!

73d Annual Priced Catalogue of

VEGETABLE, FARM AND FLOWER SEEDS

is now ready and mailed free to all applicants.

BRIDGEMAN'S SEED WAREHOUSE,
37 East 19th St., New York City.

Hough's "American Woods"

A publication illustrated by *actual specimens*

PREPARATIONS OF WOODS FOR STEREOPTICON AND MICROSCOPE, SPECIMENS OF WOODS FOR CLASS USE, ETC. If you are interested in trees or woods in any way, send for our circulars and sample specimens. Address,

R. B. HOUGH, Lowville, N. Y.

How to Avoid Peach Orchard Blights.

Prof. W. G. Johnson, State Entomologist of Maryland, lately inspected the nursery stock of the Harrison's Nurseries, Berlin, Md., and found it free from dangerous insects or plant diseases. This is a highly commendable plan, and the J. G. Harrison Company will no doubt be repaid many fold for their progressiveness. They further offer to send to all who are interested their instructive nursery book free of charge.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

WE HAVE IT AT LAST!

AN

EARLY DWARF LARGE FLOWERING COSMOS.

Blooms from July till frost.
Grows only 4½ feet high.
Color Snowy White, tinted with Rose.

THE FINEST NOVELTY of the YEAR.

PRICE 25 cts. PER PACKET.
and to each purchaser will be sent

FREE

DREER'S GARDEN CALENDAR for 1897

A handsome book of 168 pages, with beautiful litho-embossed cover showing the new Cosmos in colors and containing illustrations and descriptions of all the valuable new and standard Seeds, Plants & Bulbs.

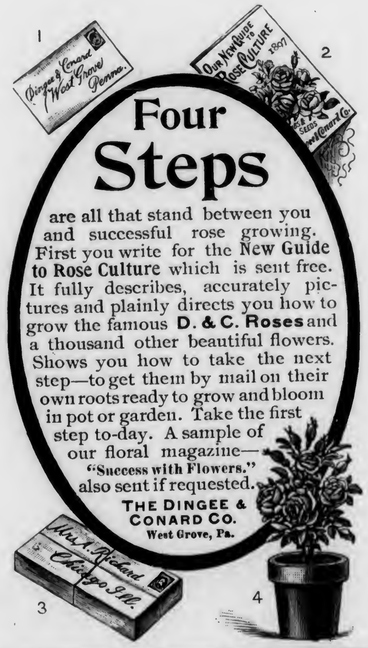
HENRY A. DREER.
714 CHESTNUT ST.
PHILADELPHIA.

Shed about Beautiful **FLOWERS** FROM **SEEDS**

BY THE Pioneer SEEDSWOMAN ... of America.

My 1897 Catalogue, the handsomest published, tells the secret FREE to every reader of this Magazine

MISS C. H. LIPPINCOTT, 319 SIXTH ST. S. MINNEAPOLIS, MINN.



Four Steps

are all that stand between you and successful rose growing. First you write for the **New Guide to Rose Culture** which is sent free. It fully describes, accurately pictures and plainly directs you how to grow the famous **D. & C. Roses** and a thousand other beautiful flowers. Shows you how to take the next step—to get them by mail on their own roots ready to grow and bloom in pot or garden. Take the first step to-day. A sample of our floral magazine—"Success with Flowers," also sent if requested.

THE DINGEE & CONARD CO.
West Grove, Pa.

Not even

Ermisch's

CATERPILLAR LIME

RAUPENLEIM, OWL TRIDENT BRAND

CAN UNDO DAMAGE done by Catterpillars, Canker-worms, Borers, Scales, Pears Psylla and other insects to your fruit and shade trees, **but a timely application can and will prevent future damage.**

NOW IS THE TIME TO PROTECT YOUR TREES against these pests by using this tried and approved remedy. Send for circulars. For sale by all prominent seedsmen and

William Menzel & Son
64 Broad Street
Sole Agents for United States and Canada — **New York City**

The Rose: Its Cultivation, Varieties, etc.

BY H. B. ELLWANGER

Directions for cultivation, for planting, pruning, propagation, the treatment of diseases and insect enemies, particularly valuable for its classification, alphabetical and descriptive list of nine hundred and fifty-six varieties. Cloth, 16vo. Price, **$1.25.**

THOMAS MEEHAN & SONS, Germantown, Pa.

ARMSTRONG & McKELVY, Pittsburgh.
BEYMER-BAUMAN, Pittsburgh.
DAVIS-CHAMBERS, Pittsburgh.
FAHNESTOCK, Pittsburgh.
ANCHOR, ECKSTEIN } Cincinnati.
ATLANTIC, BRADLEY, BROOKLYN, JEWETT, ULSTER, UNION } New York.
SOUTHERN, SHIPMAN } Chicago.
COLLIER, MISSOURI, RED SEAL, SOUTHERN } St. Louis.
JOHN T. LEWIS & BROS CO, Philadelphia.
MORLEY, Cleveland.
SALEM, Salem, Mass.
CORNELL, Buffalo.
KENTUCKY, Louisville.

THERE is no getting away from the fact that Pure White Lead (see list of *brands* which are *genuine*) and Pure Linseed Oil make the best paint.

Properly applied, it will not chip, chalk or scale off, but will outwear any of the mixtures offered as substitutes. It is, therefore, by far the most economical.

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information and card showing samples of colors free; also cards showing pictures of twelve houses of different designs painted in various styles or combinations of shades forwarded upon application to those intending to paint.

National Lead Co., 1 Broadway, New York.

1,000,000 TREES Over 1,000 varieties. Fruit and Ornamental Shrubs, Vines and Roses. All standard and special varieties. Send for Illus. Catalogue.
W. S. LITTLE & CO., Rochester, N. Y.

WATER LILIES. We are headquarters for **AMERICAN, EGYPTIAN, JAPAN** and **CHIMSI LOTUSES, VICTORIA RIGIA, HARDY** and **TENDER NYMPHÆAS** and all sorts of **AQUATICS.** Illustrated catalogue free.
GEO. B. MOULDER, LILY PARK, SMITH'S GROVE, KY.

Ornamental Trees Shrubs and Evergreens

Largest Assortment of Seedling and Transplanted Native Trees and Shrubs in America.

Strong field-grown HERBACEOUS PLANTS in great variety. Large Sugar and Norway Maples, Elms, Ash and other trees suitable for planting for immediate effect.

Beautiful four to six feet specimen plants of Magnolia Soulangeana on their own roots.

JAPANESE MAPLES. Finer varieties in pots. Strong, bushy specimen plants of the blood-leaved variety, 2½ feet to 3 feet, on their own roots.

Superintendents of Parks and Cemeteries and Amateurs requiring large quantities of stock should send us their lists for estimates.

LANDSCAPE ENGINEERING.—Plans prepared and carried out.

New Descriptive Catalogue, "A Guide to Tree Planting," mailed for 6 cents in stamps.

THOMAS MEEHAN & SONS, Germantown, Phila.

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for **25c.**

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., - - - Boston.

TREES-SHRUBS-ROSES

The largest and most complete collections of **GENERAL NURSERY STOCK** in America, including all desirable **novelties.** Beautiful Catalogue (168 pages—1896 edition) free to customers; to others 10 cents. Every intending buyer should have it.

ELLWANGER & BARRY, Mount Hope Nurseries, Rochester, N.Y.

Owners of Private Estates,

who, plant this Spring, will find it of interest and value to correspond with us for the supply of many **Rare Trees, Shrubs and Plants** which we offer in quantity and at exceptional low rates.

Our stock grown largely in New England is valuable for vigor and high quality, and as we grow largely for private planting, our collection is one of the largest in the United States, and embrace many rare subjects which critical buyers of taste are looking for.

Of such fine Trees as the **Abies Concolor, Picea Pungens, Syringa Japonica,** we have a large stock, and also of many rare Shrubs, etc., not generally offered. **Hardy Perennial Plants** we grow by the acre, and offer of these the largest collection in the country.

Write us for special prices and catalogue. **THE SHADY HILL NURSERY CO**
102 State St., Boston, Mass.

Fruit Trees and Small Fruits

LORENTZ PEACH

The best for the least money. Biggest stock, completest assortment. Small fruits, fruit trees, roses, vines, shrubs—for the largest growers and the smallest. Crates and baskets. Illustrated descriptive and price catalog free upon request.

REID'S NURSERIES, BRIDGEPORT, OHIO.

ELDORADO BLACKBERRY

FLOWER POTS

THE WHILLDIN POTTERY CO.,
713, 715, 717, 719 Wharton Street,
Philadelphia, Pa.

BRANCH WAREHOUSES:
Randolph Avenue and Union St., Jersey City.
Jackson Ave. and Pearson St., Long Island City.

Park and Cemetery. An illustrated monthly for the advancement of Art out of doors Practical articles of permanent value by competent authorities on subjects of special interest to **Commissioners, Trustees** and **Superintendents** of **Parks** and **Cemeteries,** and those interested in **Tree Planting** and **Town** and **Village Improvements.** Plans of Parks or Cemeteries, and their architectural and landscape features, illustrated every month. Subscription $1.00 a year. **R. J. HAIGHT, Publisher, 334 Dearborn Street, Chicago.**

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HARDY FERNS AND FLOWERS

You will find over 40 varieties of hardy

FERNS in my Catalogue, **beautiful,** and **easily grown.**
CYPRIPEDIUMS—white, purple and yellow.
TRILLIUMS—large pure white, purple, etc.
WATER PLANTS. Sweet Water Lillies, etc.
WILD FLOWERS and bedding plants.
IRIS—in great variety, with beautiful markings.
SHRUBS, ROSES, etc.

Send for Descriptive Illustrated Catalogue.

EDWARD GILLETT, Southwick, Mass.

WILD FERNS & FLOWERS

The most beautiful that grow in all countries. I grow and test them in this climate, and sell the hardiest. Hardy orchids, ferns, vines, climbers, lilies, shrubs, trees. Plants for sun and shade, for bog and rock-work, border plants, etc. Surprisingly low prices for the quality and kind of stock.

My illustrated catalogue describes about 700 kinds, tells where to plant and how to grow them. Mailed for 2c. stamp.

F. H. HORSFORD, Charlotte, Vt.

Trailing Arbutus · Native Flowers

and best **Ornamental Trees and Plants** for landscape architects, parks, cemeteries and private places. Catalogue free. Lowest rates to the trade. Apples, plums and currants wanted in exchange. Send lists.

WM. H. HARRISON & SONS, Lebanon Springs, N.Y.
Wyomanock Nurseries.

---

100 Rocky Mountain Wild Flowers

are fully described in my '97 catalogue; free to flower lovers, and a packet of choice seeds included to those who enclose stamp and mention this paper.

D. M. ANDREWS, Boulder, Colo.

BUY NO INCUBATOR

and pay for it before giving it a trial.

The firm who is afraid to let you try their incubator before buying it, has no faith in their machine. We will sell you ours **ON TRIAL. NOT A CENT until tried, and a child can run it with 5 minutes attention a day.** We won **FIRST PRIZE WORLD'S FAIR** and will win you for a steady customer if you will only buy ours on trial. **Our large catalogue will cost you 5 cents and give you $100 worth of practical information on poultry and incubators and the money there is in the business.** Plans for Brooders, Houses, etc., 25.

N. B. Send us the names of three persons interested in poultry and 25 cents and we will send you "The Bicycle: Its Care and Repair," a book of 180 subjects and 80 illustrations, worth $5.00 to any bicycle rider.

VON CULIN INCUBATOR CO.,
Box 180. Delaware City, Del.

ONE CENT

for a postal card will bring you our new and beautiful Catalogue of the

"Iron Age" IMPLEMENTS.

Cultivators, Harrows, Wheel Hoes, Seed Drills, Riding Cultivators, Potato Planters, Water Trucks, etc., etc.

BATEMAN MFG. CO., Box 121, Grenloch, N.J.

Are You Insured

Against the ravages of Insects and Fungi on your Fruit Trees for 1897? Remember Spraying is the only insurance you can get, and the **ECLIPSE PUMP** is the BEST on the market. Send for our '97 catalogue.

MORRILL & MORLEY
Benton Harbor, Mich.

AGITATORS THAT AGITATE

keep the **liquid always stirred** to a point of utility.

The DEMING AUTOMATIC combines more good qualities than any agitator on the market. Used only on the **DEMING SPRAYING OUTFITS.** Spray with Bordeaux Nozzle, "The World's Best." Handsome 40-Page Book on Spraying sent free on application.

THE DEMING CO.
SALEM, OHIO.

HENION & HUBBELL,
General Western Agents,
61-69 Jefferson St., Chicago.

EVERGREENS.

Largest stock in America, including Colorado Blue Spruce and Douglas Spruce of Colorado.

Also *Ornamental, Shade and Forest Trees, Tree Seeds, Etc.*

R. DOUGLAS & SONS, Waukegan, Ill.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

BUY NORTHERN GROWN SEEDS

FARM SEEDS

Salzer's Seeds grow and produce! John Breider, Mishicott, Wis., astonished the world growing 173 bu. of Salzer's Silver King Barley per acre. Don't you believe it? Just write him. In order to gain, in 1897, 100,000 new customers, we send on trial

10 DOLLARS' WORTH FOR 10c.

12 pkgs. of new and rare farm seeds, including above Barley, Teosinte, Giant Spurry, Sand Vetch, "40c. Wheat," etc., positively worth $10, to get a start, including our great seed catalog, all postpaid, for 10 cents. Catalog alone, 5c. postage.

Largest growers of farm seeds and potatoes ($1.50 a bbl) in the world.

35 pkgs. earliest vegetable seeds, $1.00

JOHN A. SALZER SEED CO. LACROSSE WIS.

WE grow **TREES, PLANTS** and vines; all kinds; 100,000 **FRUIT TREES.** Millions of fruit and vegetable plants; evergreens, shrubs and shade trees. Stock first-class. Prices low Our 1897 catalogue free. **T. J. DWYER,** Orange Co. Nurseries, Cornwall, N. Y.

100 BEST EVERGREEN SEEDLINGS

Mention this paper.

delivered **free** by mail, only $1. **100** best **evergreens** 2 to 5 ft. delivered east of Rocky Mts., **only $10.** Write for **free catalogue** and **price list & 50 big bargains,** selections from complete **nursery** stock. **Cash** paid for getting up **clubs** or to salesmen **with** or **without** experience. Address

D. HILL

EVERGREEN SPCIALIST, DUNDEE, ILL.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

VOL. X. NO. 463.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

JANUARY 6, 1897.

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

THE WM. H. MOON CO.

GLENWOOD NURSERIES
Morrisville, Pa.

Offer for the SPRING OF 1897, a Complete Assortment of

Flowering Shrubs
Grasses, Dahlias, Climbers and Climbing Roses

Evergreen and Deciduous Trees

Special attention is called to the following:

Chestnuts, large varieties Numbo and Paragon.
Asparagus Roots, strong 2-year olds, Palmetto, Barr's Mammoth and Conover's.
Strawberry Raspberry, a Japanese Novelty.
Burbank's Golden Mayberry.
Industry Gooseberries and Fay's Prolific Currants.
Purple-leaved Beech, 4 to 6 feet.
Elms, American and English.
Horse-chestnuts, Lindens and Magnolias.
Maples, Norway, Sugar, Sycamore, Ash-leaved and Silver-leaved. By the thousand, from 6 to 12 or 14 ft.
Oaks, English, Pin, Mossy Cup, Red, Scarlet and Turkey.
Poplars, Carolina and Balsam.
Willows and **Weeping Trees,** in variety.
Hedge Plants. Evergreen and Deciduous varieties, including 200,000 California Privet, from 1 to 5 feet.
Evergreens, Arbor Vitæs, dwarf and tall-growing sorts.
Nordman's Fir, from 1 to 3 feet.
Balsam and **European Silver Fir.**
Hemlock, Colorado Blue, Norway and White Spruce.
Retinosporas, in variety of all sizes.
Pines, White, Scotch, Austrian and Dwarf.
Evergreen Shrubs, including Mahonias, Hollies and Rhododendrons.
Deciduous Flowering Shrubs. General Assortment of various sizes.

DESCRIPTIVE ILLUSTRATED CATALOGUE of 48 pages, containing prices, etc., to be had on application. Correspondence solicited.

New, Rare and Beautiful Plants

Lord Penzance's New Hybrid Sweetbriars, Old Garden Roses, New Roses, Standard Roses, Philadelphia Lemoenei, New Lilacs, Lonicera Hildebrandtii, Spiræa "Anthony Waterer," Tecoma Smithii, new Weigelas, etc.
A large collection of Rare Hothouse and Greenhouse Plants, Anthuriums, Alocasias, Orchids, Rare Conifers and other beautiful Evergreens. Magnolias, Japanese Maples, with other choice Trees and Shrubs, Cannas, etc.
PAEONIES—A large collection of the finest in cultivation. Hardy Perennials, Phloxes, Japanese Iris, Roses, Clematis, etc. New and Standard Fruits, etc.
Catalogue on application.

JOHN SAUL, WASHINGTON, D. C.

THE GAULT RASPBERRY

A perpetual bearer. Fruit of delicious flavor and always fresh. Just the berry for private gardens. For cuts, circulars, colored plate or any information respecting it, send to the originator,

W. C. CAULT

Box 90. Ruggles, Ashland Co., Ohio.

Southern Florist and Gardener.

THE ONLY FLORAL MAGAZINE FOR THE SOUTHERN CLIMATE.

ISSUED ON THE 1ST OF EACH MONTH.

$1.00 per Year, Ten cents additional to pay postage on one of our handsome floral premiums, which we give free of charge to each new subscriber.

Liberal Cash Commissions to Agents.
Advertising Rates on Application.

PUBLISHED BY

The Southern Florist and Gardener Pub. Co.

ELIZABETH FRY, Editor and M'g'r. 336 W. GREEN ST., LOUISVILLE, KY.

SAMPLE COPY FREE.

Vick's Flower and Vegetable Garden. A book of over 200 pages. Hundreds of illustrations and six colored plates. Full of practical directions for the cultivation of flowering, ornamental and kitchen garden plants. **$1.50**

THOMAS MEEHAN & SONS, Germantown, Phila.

Under New Management

ROMANCE

20 ROMANTIC STORIES FOR 10c.

More reading matter than any other magazine in the world.

A LIBRARY IN ITSELF.

Romances of Love and War, Romances of Real Life, Stories of Gallantry, Tales of Adventure, Stories of the Boudoir.

Best known authors and unknown authors.

SUBSCRIPTIONS $1.00 A YEAR
OR,
Romance and any $1.00 a year Magazine, $1.50.
EXTRAORDINARY PRICES OFFERS.

Send 10c. for sample copy and particulars.

Gilson Willets

Editor and Publisher

1440 Broadway, New York

Roe's Play and Profit in My Garden. The author takes us to his garden on the hillside in the vicinity of West Point, and shows us how out of it, after four years' experience, he evoked a profit of $1,000, and this while carrying on pastoral and literary labor. It is very rare that so much literary taste and skill are mated to so much agricultural experience and good sense. Cloth, 12mo. **$1.50**

THOMAS MEEHAN & SONS,
Germantown, Phila.

CHOICE SPECIMEN PLANTS OF

MAGNOLIA

(Chinese Magnolia)

SOULANGEANA

PROBABLY no flowering tree attracts so much attention as this one when it is covered, in the spring, with its abundance of large-sized flowers. They appear in such quantities as to completely clothe the tree, and the flowers are equally abundant each season. They can be planted either as single specimens, or in groups of two or three. ::: Our stock comprises plants of many sizes, from small 12 to 18 inches in height, to 5 to 6 feet. While all sizes are good plants, the larger ones are particularly fine specimens, well set with flower buds.

Send for our new DESCRIPTIVE CATALOGUE *containing prices on these and other* ORNAMENTAL TREES, SHRUBS, *Etc.*

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers — Station G, Germantown, Phila., Pa.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO. — ESTABLISHED 20 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of Greenhouse Heating and Ventilating Apparatus

The highest awards received at the World's Fair for Horticultural architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUE.

233 MERCER STREET, NEW YORK CITY

You Can Eat Campbell's Early Grapes without eating the seeds. The pulp is sweet to centre so the seeds are easily separated without making the tongue sore as certain grapes do.

CAMPBELL'S EARLY GRAPES

are unusually hardy and vigorous. Largest clusters, finest quality. Ripen early and keep late. None genuine without our seals. Elegant Catalogue free. GEO. S. JOSSELYN, Fredonia, N.Y.

BURPEE'S FARM ANNUAL for 1897 TELLS the PLAIN TRUTH About The BEST SEEDS that Grow! With hundreds of illustrations, remarkable New Novelties painted from nature, it is "The Leading American Seed Catalogue." Mailed FREE.

W. ATLEE BURPEE & CO., PHILADELPHIA, PA.

"JUST RIGHT!"

The Verdict of Users of the New

No. 6 and No. 7

IMPROVED MODELS OF THE

Remington Standard Typewriter.

A maximum of Durability, Convenience and Economy, with a minimum of machinery.

SEND FOR CIRCULARS.

WYCKOFF, SEAMANS & BENEDICT,

105 S. Ninth St., Philada. (Continental Hotel.)

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

CHOICE SPECIMEN PLANTS OF **MAGNOLIA** (Chinese Magnolia)

SOULANGEANA

PROBABLY no flowering tree attracts so much attention as this one when it is covered, in the spring, with its abundance of large-sized flowers. They appear in such quantities as to completely clothe the tree, and the flowers are equally abundant each season. They can be planted either as single specimens, or in groups of two or three. ::: Our stock comprises plants of many sizes, from small 12 to 18 inches in height, to 5 to 6 feet. While all sizes are good plants, the larger ones are particularly fine specimens, well set with flower buds.

Send for our new DESCRIPTIVE CATALOGUE *containing prices on these and other* ORNAMENTAL TREES, SHRUBS, *Etc.*

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers — Station G, Germantown, Phila., Pa.

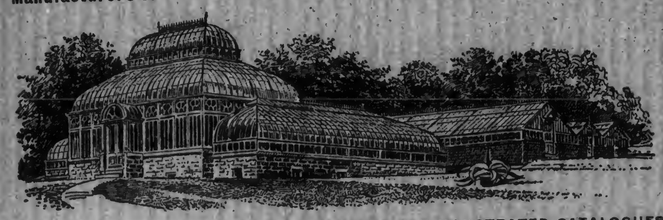
WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

You Can Eat

Campbell's Early Grapes without eating the seeds. The pulp is sweet to centre, so the seeds are easily separated without making the tongue sore, as common grapes do.

CAMPBELL'S EARLY GRAPES

are unusually hardy and vigorous. Largest clusters, finest quality. Ripen early and keep late. None genuine without our seals. Elegant Catalogue free. GEO. S. JOSSELYN, Fredonia, New York.

BURPEE'S FARM ANNUAL for 1897

TELLS the PLAIN TRUTH About The BEST SEEDS that Grow! With hundreds of illustrations, remarkable New Novelties painted from nature, it is "The Leading American Seed Catalogue." Mailed FREE.

W. ATLEE BURPEE & CO., PHILADELPHIA, PA.

"JUST RIGHT!"

The Verdict of Users of the New

No. 6 and No. 7

IMPROVED MODELS OF THE

Remington

Standard Typewriter.

A maximum of Durability, Convenience and Economy, with a minimum of machinery.

SEND FOR CIRCULARS.

WYCKOFF, SEAMANS & BENEDICT,

105 S. Ninth St., Philada. (Continental Hotel.)

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

INTENTIONAL SECOND EXPOSURE

CHOICE SPECIMEN PLANTS OF

MAGNOLIA

(Chinese Magnolia)

SOULANGEANA

PROBABLY no flowering tree attracts so much attention as this one when it is covered, in the spring, with its abundance of large-sized flowers. They appear in such quantities as to completely clothe the tree, and the flowers are equally abundant each season. They can be planted either as single specimens, or in groups of two or three. ::: Our stock comprises plants of many sizes, from small 12 to 18 inches in height, to 5 to 6 feet. While all sizes are good plants, the larger ones are particularly fine specimens, well set with flower buds.

Send for our new DESCRIPTIVE CATALOGUE containing prices on these and other ORNAMENTAL TREES, SHRUBS, Etc.

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers — Station G, Germantown, Phila., Pa.

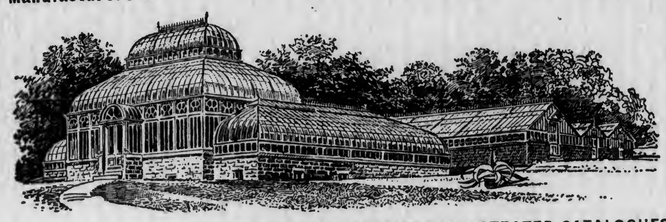
WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

You Can Eat

Campbell's Early Grapes without eating the seeds. The pulp is sweet to centre, so the seeds are easily separated without making the tongue sore, as common grapes do.

CAMPBELL'S EARLY GRAPES

are unusually hardy and vigorous. Largest clusters, finest quality. Ripen early and keep late. None genuine without our seals. Elegant Catalogue free. GEO. S. JOSSELYN, Fredonia, New York.

BURPEE'S FARM ANNUAL for 1897

TELLS the PLAIN TRUTH About The BEST SEEDS that Grow! With hundreds of illustrations, remarkable New Novelties painted from nature, it is "The Leading American Seed Catalogue." Mailed FREE.

W. ATLEE BURPEE & CO., PHILADELPHIA, PA.

"JUST RIGHT!"

The Verdict of Users of the New

No. 6 and No. 7

IMPROVED MODELS OF THE

Remington

Standard Typewriter.

A maximum of Durability, Convenience and Economy, with a minimum of machinery.

SEND FOR CIRCULARS.

WYCKOFF, SEAMANS & BENEDICT,

105 S. Ninth St., Philada. (Continental Hotel.)

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

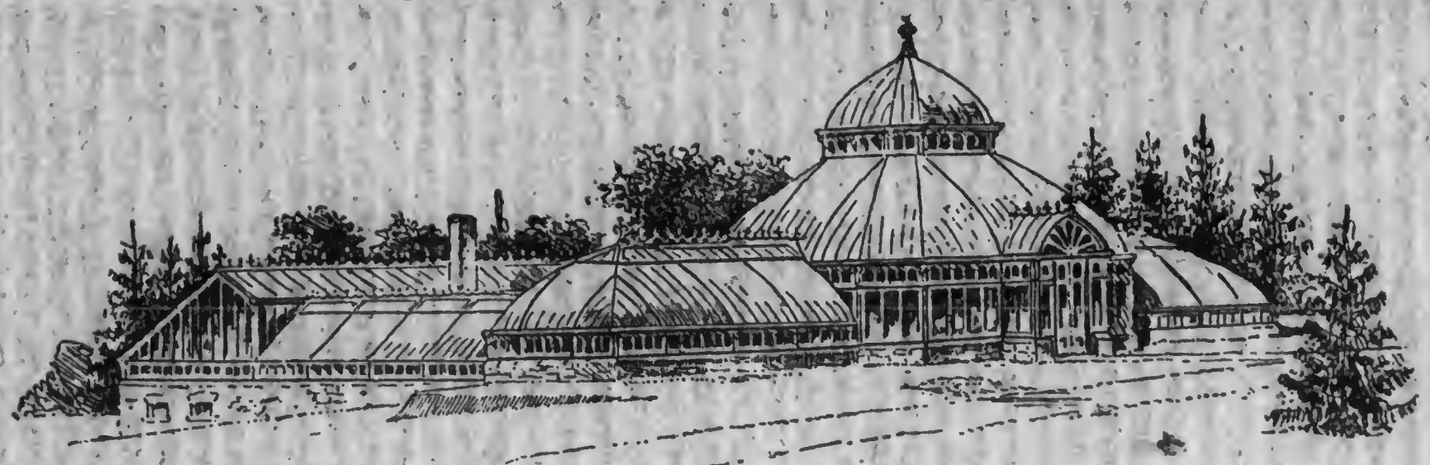
INTENTIONAL SECOND EXPOSURE

LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS

STEAM AND HOT WATER HEATING ENGINEERS

Plans and Estimates furnished on application



Largest Builders of Greenhouse Structures. **Six Highest Awards at the World's Fair**

Send four cents postage for illustrated catalogue

LORD & BURNHAM CO.

ARCHITECTURAL OFFICE, 160 FIFTH AVE., COR. 21st STREET, NEW YORK.

Factory: Irvington-on-Hudson, New York **Mention Paper**

FLOWER POTS—STANDARD

You will make a mistake if you place your order for Flower Pots without first receiving our estimate for the same. Our plant is now the largest in the WORLD.

STOCK UNLIMITED. **GOODS UNEQUALED**

A. H. HEWS & CO., North Cambridge, Mass.

LANDSCAPE AND SANITARY ENGINEERING

Sub-division and treatment of property for towns, parks and villa sites. Designs for grading, road building, and other improvements. Public and domestic water supply. Sewage disposal for houses and towns. Reports, estimates, specifications and superintendence.

TOPOGRAPHICAL ENGINEERING AND SURVEYING

HAROLD VAN DUZEE

PHILADELPHIA, PA.
427 WALNUT ST.

EDWARD CAMPBELL

LANDSCAPE ARCHITECT AND ENGINEER

ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. **Fine Crushed Stone for Walks and Carriage Drives.**

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS, **The finest general assortment of Hardy Ornamental Plants in America.** Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.

THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without putty. Latest methods of Ventilation, Steam and Hot-Water Heating Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. ☞ Don't fail to get our Plans and Prices.

PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

PHYSOSTEGIA VIRGINIANA

PHYSOSTEGIA VIRGINIANA.

FALSE DRAGON-HEAD.

NATURAL ORDER, LABIATÆ.

PHYSOSTEGIA VIRGINIANA, Bentham.—Stem one to three feet high, simple or sparingly branched; leaves one to three or four inches long, linear-lanceolate, and obovate-lanceolate, serrate above the middle, tapering and entire at the base, often pellucid-punctate; bracts lance-ovate, acuminate, shorter than the calyx; flowers in dense four-rowed spikes (or sometimes rather distant and racemose) of two to six or eight inches in length; corolla from half an inch to an inch long, pale purple, or flesh colored, sometimes variegated, nutlets smooth. (Darlington's *Flora Cestrica* See also Gray's *Manual of the Botany of the Northern United States*, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.)

The order of Labiates to which the plant now illustrated belongs, is what botanists call a very natural one; that is to say they have so many striking peculiarities in common, that even those not botanists may have some fair guesses at their relationship. The stems are always four-angled; the leaves are always opposite and in pairs, and they have mostly oil dots in the leaves which exude an aromatic odor when rubbed. They have an irregular, usually two-lipped corolla, with not more than two or four stamens; and they have a four-lobed ovary, with a solitary style rising from the base of the lobes. The bi-lobed corolla often takes the form of an arched upper portion, and the lower lip-like; and it is from this peculiarity that the order derives its name *Labiatæ—labia*, being Latin for a lip. The *Salvia* or Sages are familiar illustrations of the points we have named. But these points are to be taken collectively in order to establish the plant as a Labiate. There are some with square stems and opposite leaves; some with dotted, fragrant leaves; some with a four-lobed ovary and single style, in other orders,—but then with other characters which a Labiate has not. Even in the order itself there are cases where some plants vary from this type in some respects. They may have the square stems and the leaves may be opposite, but not punctate or odorous; or they may have all these points and not be bi-labiate; and in some cases the corolla may be almost regular as in the mints, and yet have all the other characters complete. These facts about the order are noted here, because our "False Dragon-head" is an illustration of this tendency to vary from the usual natural characters of a great order. The stem is square and the leaves opposite; but usually it requires a strong lens to see the pellucid dots, though sometimes they are more distinct than at other times. They are clearer in the later stem leaves. In those of early spring they are scarcely discernible. Then the general aspect of the flower is more like a Peutstemon at first sight; but the other characters already noted at once correct this passing impression. The lesson is important as showing that however natural an order may seem it is not founded on any distinct type in nature; but all orders are really closely related to each other, and these apparent oddities are merely the links which bind them together.

The open puffed-out, Pentstemon-like flower of our plant attracted the attention of botanists early in its history. It was on its first discovery classed with *Dracocephalum*, the name meaning "Dragon's-head." It seems to have been among the earliest of our pretty wild flowers to receive attention from European cultivators, as it is on record as having been in the garden of Mr. James Sutherland as early as 1683. About one hundred years after this a slight variation is figured in the Botanical Magazine as *Dracocephalum denticulatum*, the botanists of that time not knowing its great range of variation. The Editor says that particular form was raised from seeds sent from Philadelphia, though "collected at considerable distance from that city;" and about this time it is said a London Nurseryman, Watson, received seed from Charleston. About this time another slight variation was received from Bosc and Michaux at Charleston, and, raised in the garden of Cels at Paris, was figured and described by Ventenat as *Dracocephalum variegatum*. All these forms with some others are now reduced by Professor Gray to mere varieties of one species, under

PHOTOCOPY OF ORIGINAL

the name of *Physostegia Virginiana*. *Physostegia* was first taken from *Dracocephalum* by Bentham in his Memoir on Labiatæ, published in London in 1834, hence it is to be found under *Dracocephalum* in the works of all our botanists before that time.

So good a genus is it regarded, however, that it is not even included in the same section of the order,—*Dracocephalum* being classed with the *Nepetæ* or cat-mints, while *Physostegia* is in the *Stachyeæ* division of the order. Dr. Darlington from whom, as our drawing is from a Pennsylvania specimen, we have taken our description, says the name is derived from *physa*, a bladder, and *stege*, a covering; "alluding to the inflated flowers." As already noted the inflated flowers generally strike one as peculiar; but Dr. Gray observes that though the name would be applicable to this peculiarity, it was really suggested by the "turgid fruiting calyx." The calyx, as Dr. Darlington notes in his generic description, is at first tubular, but becomes "finally inflated-campanulate."

The change to a new genus necessitated a change in the common name. But as it seems to have received no common name from common people, botanists have endeavored to lead off in the matter, and hence "False Dragon-head" has been suggested. It is scarcely likely to become general as a generic appellation, as it conveys no idea to the popular mind. A popular name could perhaps be suggested by what has been regarded as the singular power of the flower stalks to remain to the right or to the left, just as they may be placed. This has been noticed by botanists for many years past. It is noted as early as 1712 in a paper in the Memoirs of the Academy of Sciences of Paris of that year, where it is said that the "flowers are susceptible of being turned horizontally to the right or the left in a half circle, and they remain immovable in the position in which they are placed. This property is called catalepsy, and exists in some other labiates." Very much of wonder has been bestowed on this property in *Physostegia*, but if we examine it closely and carefully we may see that it is a very simple affair. The very short pedicels in being turned from side to side have to press over the somewhat rigid bracts, and are thus held in place just as moved. This has suggested the name of "Cataleptic flower" to some from the resemblance of this to the rigidity of the limbs in that disease. To moderns, however, the resemblance to a swivel would be more suggestive, and it would not be unlikely when the peculiar movement comes within popular intelligence that "Swivel flower" becomes its popular name. The Mexican common name is "Kalmatzalin."

It has not made for itself a name in the arts and sciences. Dr. L. Peyre Porcher says its medical virtues are "similar to cat-mint," which, as this plant through not being a "native flower of the United States" will not have a place in our pages, may be noted here as considered to be a good remedy for colds and flatulent colic in infants. An infusion of the flowers "was said" to open obstructions of the liver and spleen. "It is said" to be a good remedy for toothache, crushing the leaves in the decayed tooth, producing an abundant flow of saliva, and causing the pain to cease in a few moments,—and it has been used in yellow fever, and had an "ephemeral reputation in hydrophobia."

It varies much in different locations,—but the peculiarities are continued when the plants are made to grow side by side. This point, however, has not the significance it once had. For a time an idea prevailed that changes in form were due to external conditions,—and that we had to look to what was conveniently termed environment, as a leading factor in inducing change in character, such as indicated in connection with the False Dragon-head. But closer observation teaches that it is the degree of energy in the plant itself, as operating on its various parts, that influences change. Plants which propogate extensively by underground runners, as the present subject does, do not show this range of variation, as do those which extend themselves mainly from seed. Dandelions, for instance, each plant from a separate seed, show inumerable variation, under exactly the same conditions of environment. Porcher says it is almost an aquatic in some parts of South Carolina, at least growing in places almost continually inundated. Our specimen is from a sort of winter swamp though dry in summer, from near Odin, Illinois. It is found in some of its forms over most of the States east of the Mississippi.

WILD FLOWERS AND NATURE.

THE INCOMING OF MAY.

——now stooping showers
Have sandaled the feet of May with flowers.
The fragile frond of the fern uncurls,
And hawthorns necklace themselves with pearls.
—ALFRED AUSTIN.

HOW PLANTS ADAPT THEMSELVES TO CIRCUMSTANCES.—A curious incident of the power of plants to adapt themselves to circumstances, came under my notice recently in the shape of a *Pontederia crassipes*. Last fall I obtained a slip of a *Pontederia*, which I placed in a bowl in my sitting-room window. By spring it was a thrifty plant, with beautiful waxen leaves. When it was time to set my plant out of doors, I looked about for something in which to place my lily. For want of something better, I put it in an old dinner boiler of generous proportions. By mid-summer it had outgrown the boiler. Again I looked about, and this time I found a crock, quite deep, but not very wide. I divided my plant putting half in the crock and the other half in the boiler. This latter I kept thinned out by giving slips to friends; the other plant was left to grow at its own sweet will, and, being a thrifty plant, very much bent on growing; and finding it could not spread according to its natural mode, it changed its tactics and took to growing upward. The air bulbs developed into long stems, and at the end of each grew a very large leaf twice the size of an ordinary leaf. And here I would like to say that, as a house plant, there is nothing more attractive than a healthy *Pontederia*, with its glassy waxen leaves; and, moreover, it requires so little attention, merely keeping it replenished with water.

MRS. KATE YOUNG.

Philadelphia.

Some curious facts about this plant appears in the volume for 1892. It is said that in Florida the plants sink to the bottom after the leaves have decayed, and rise to the surface when springtime comes round again. The change in the leaf noted by Mrs. Young will be very interesting to morphologists.

THE CONSTRUCTION OF THE DOGWOOD FLOWERS.—When the spirit of Spring has run riot in all nature and has awakened into life new beauty everywhere, one of the sights which always bring a thrill of pleasure to us, is the flowering Dogwood in full bloom. The prodigious mass of white, against the background of green, renders it one of the cheeriest visitors of the early summer. Although the flowers are small and inconspicuous, the involucral bracts are large and showy. These bracts, which have developed such a petaloid character are interesting, however, morphologically as well as from an aesthetic point of view.

We will never have done asking the how and the why of things. And when we look at the Dogwood branch, adorned with its burden of bloom, we are led to inquire concerning the origin of the beautiful white or creamy tinted floral leaves or bracts, which subtend the head of flowers.

If we examine the flower-buds in the Fall, we find them protected by four bud-scales, two inner ones, which form an immediate protec-

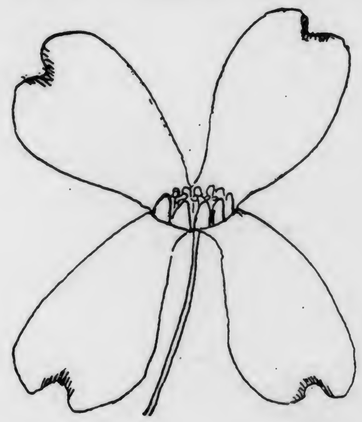


Fig 7.

PHOTOCOPY OF ORIGINAL

tive covering, and two outer ones, which completely envelop the bud. These bud-scales, together with the treasures they enclose, after their long winter's sleep, respond to the quickening influences of Spring's magic wand. Instead of relinquishing their hold upon life when the flowers no longer need them for protection against climatic changes, they take a new lease of life, and with wonderful activity build themselves into the splendid display, which constitutes the chief beauty of the Dogwood tree. The small dark-colored, sometimes purplish notch at the apex of these involucral leaves is but the hardened, woody bud-scale that is pushed out by the new impulse of growth which unfolds the bud and expands the leaves. If the fine thin lamina of the fully developed bud-scale, which now becomes the involucral bract permeated by delicate purple veins or nerves, is compared with the brown hardened notch at the apex, it is at once apparent that there is a difference in structure. The thick, woody notches were the winter wraps or outer coverings, while the gay white banners are donned for the sake of ornament or to attract attention, and their texture is accordingly admirably adapted to the purpose for which they are elaborated.

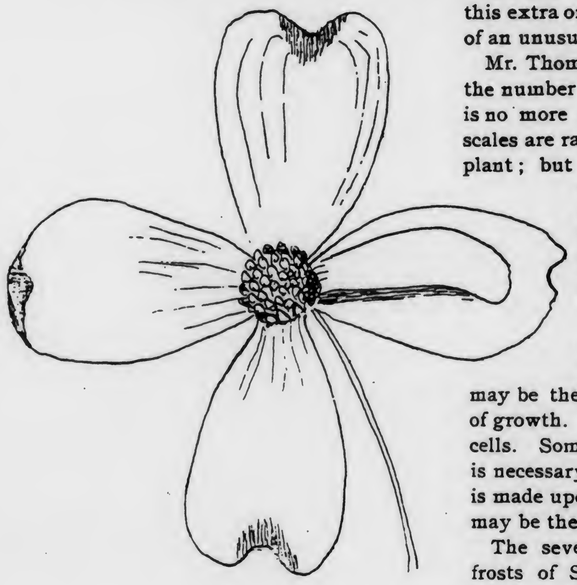


Fig. 2.

Various causes operate now and then which serve to change the even tenor of the regular laws of growth.

The plant which has learned to follow in a certain groove sometimes deviates from the beaten track. In *Cornus florida*, I have found the heads of flowers surrounded by abnormal bracts, both in regard to number and form. In some specimens only two or three involucral leaves are present while in others again, as many as five occur, the fifth one being much smaller, than the normal ones, and the brown notch is entirely wanting in it. When these abnormal flowers were collected, they were simply laid away as abnormal specimens, curiosities, monstrosities.

They do not seem so curious however, when more carefully examined.

At the base of the florets, immediately within the involucral bracts there are a number of small scales (shown in Fig., 1.) In examining these abnormal specimens it was found that where the fifth bract (as shown in Fig., 2,) was produced it occupied the position of one of these small bracts, hence it seems clear that this extra or fifth bract is simply an indication of an unusual amount of growth energy.

Mr. Thomas Meehan says, "The increase in the number of bracts in the Dogwood flowers is no more a puzzle than the decrease. Bud scales are rarely of a regular number, in any plant; but we do not notice the variation when they remain simply as scales; when they take a *second growth*, however, as they do in the Dogwood and many other plants, our attention is arrested by the fact."

When there are fewer bracts developed than the normal number, (as seen in Figs., 3 and 4), it may be the result of unfavorable conditions of growth. Some difficulty may confront the cells. Some condition may not obtain which is necessary to their growth when the demand is made upon their forces, and imperfect bracts may be the consequent result.

The severity of the winter season or the frosts of Spring may interfere with the development of the usual number of bracts.

Those who are quite familiar with the flowering Dogwood are not unmindful of the fact

Fig. 3

that the mass of floral beauty which it produces is largely dependent upon the season. Sometimes the bracts are wonderfully large and beautiful, and again they are stunted, small, and not infrequently imperfect.

Columbus, Ohio. MRS. KELLERMAN.

Read before the Columbus Academy of Science.

This paper will be read with great interest by thoughtful lovers of flowers. Indeed it will be a surprise to many advanced students of botany to learn that the Dogwood flowers described in botanical works as being "subtended by involucral bracts," are really subtended by its own bud-scales, which, after serving as protectors to the little flower buds during the winter, take a second growth to serve as mere ornament, and of no possible account in the general economy of the plant. But the same change in bud-scales is going on everywhere around us, though the fact does not appear to have attracted the observation of specialists in that line. If the bud-scales of the Walnuts and Hickories, the Ash, Horse-chestnut, and many other trees be examined early in the growing season, the same second growth of the scale to a more foliaceous organ will be observed. Nature really has few exceptional methods of operating.

In the last paragraph of the paper, there is yet room for thoughtful growth. The "season" has some little to do with the behaviour of plants —but internal energy is controlled by other more potent influences. Environment, as the conditions are termed under which plants find themselves, has lost its hold with advanced thinkers as being any great fector in the work of change, either of a temporary or permanent character.

BOTANIZING AMONG THE CLOUDS. — The Southern Alleghenies have long been favorite botanical hunting grounds, and Roan Mountain, lying partly in North Carolina and partly in Tennessee, enjoys an especial reputation in that line. Its cloud-capped summit is nearly 6,400 feet above the sea, being more than 100 feet higher than Mt. Washington, and only about 300 feet lower than Mt. Mitchell, the highest of all the Appalachians. The fact that there are good hotel accommodations on its summit, has doubtless contributed a good deal to the exploitation of the Roan's floral treasures. The facility thus afforded the plant collector to work in the midst of an interesting flora within sound of the dinner bell, so to speak, is an advantage not likely to be overestimated by any who have ever spent half a day climbing a mountain side, over rocks and through briers, to get to a good

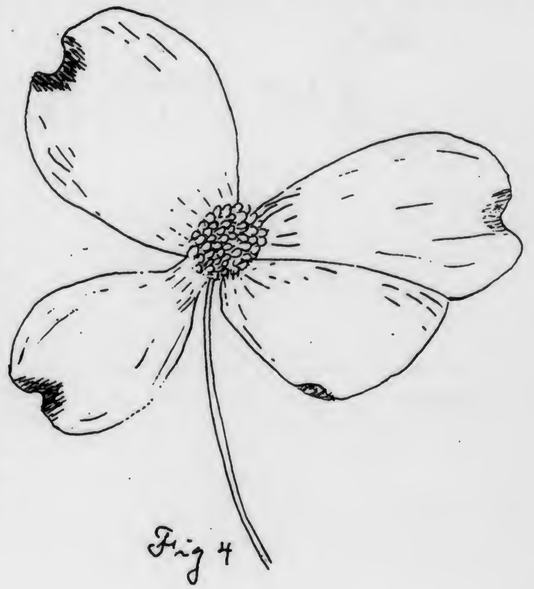


Fig 4

PHOTOCOPY OF ORIGINAL

place, and then been obliged to leave for home before sunset in order not to miss the way back.

The mountain's summit is practically bare of trees, and is locally known as the "bald." Bareness is characteristic of many of the peaks of that mountainous region, and according to an Indian tradition, these spots are said to be "the devil's footprints," made as he strode from mountain to mountain! The Roan "bald" is by no means barren, but is more or less covered with a short herbage, yielding softly as moss to the tread, and affording good pasturage for sheep and cattle. White Clover (*Trifolium repens*) is plentiful and looks sufficiently at home to be indigenous, though it may have followed the cattle up here. A more interesting plant, whose lovely lavender flowers with a yellow eye dot the green expanse and remind the Philadelphian of his native Quaker Ladies, is the thyme-leaved Bluets (*Houstonia serpyllifolia*.) The blossoms are produced on upright peduncles, but the plant creeps along the ground, forming dense mats. A pretty saxifrage (*S. leucanthemifolia*) three of whose small white petals are spotted with yellow at the base, grows abundantly among the rocks, and often becomes quite conspicuous by its foliage turning red. A small lycopod (*L. Selago*,) not unlike *L. lucidulum* in appearance, frequents the rocky banks at the very summit of the mountain; and close by is the striking and rare *Geum radiatum*, which seems to find the highest and most exposed rocks particularly to its taste. The flower of this latter plant reminds one somewhat of a large buttercup; but the plant itself is very different, with big, round, veiny root-leaves on long petioles which at intervals are provided also with a few tiny leaves, causing some describers to call the whole affair a pinnate leaf. In damp spots, *Trautvetteria palmata* displays its pretty balls of white bloom; and here grows another of the crowfoot tribe, strange to northern eyes, *Thalictrum clavatum*. The crescent-shaped fruit of the latter is an interesting feature and is often present with the flowers, which in this species, unlike our other eastern meadow-rues, are all perfect. It loves to grow in the shade by mountain brooks. The three-toothed cinquefoil (*Potentilla tridentata*) is quite abundant in places, growing flat on the open ground; and the low, spreading bushes of what the northern would call Sand Myrtle, but which the Roan people are misnaming "Heather," (*Leiophyllum buxifolium*,) make pleasant cushions for the weary to sit upon. This plant is familiar to all who are acquainted with the New Jersey Pine Barrens, but on the southern mountains the bushes have a decidedly prostrate habit; a fact which has induced some botanists to make of it a separate variety, *prostratum*.

Upon the open, head-like expanse on the mountain top, the Green Alder (*Alnus viridis*) grows in abundance, and at the time of my visit (late in July,) was laden with round, green cones of fruit. The beautiful Fraser Fir (*Abies Fraseri*) fringes the "bald" on all sides, looking in the sunshine quite silvery amid the darker foliage of the spruces. The maturing cones of this fir, sitting upright on the topmost branches of the trees, are objects of much beauty; in color, yellowish green, with brownish tips, the scales often glistening with drops of transparent balsam, not unlike dewdrops. Fine specimens of the Mountain Ash (*Pyrus Americana*,) are frequently met, but no sign of fruit on any.

A point of considerable interest is Lion's Bluff, a place on the mountain whence on a clear day may be seen a veritable sea of tree tops and mountain peaks stretching west, north and south, far as the eye can reach. My first visit, however, was accomplished in a storm of driving fog. A path leads directly to the spot from the hotel, or it would have been hazardous to venture thither in an atmosphere in which nothing was visible a hundred feet ahead. On the way, the Mountain Sandwort (*Arenaria Grœnlandica*,) was found blooming comfortably in the sand of a sort of pebbly little amphitheater among the rocks. Arrived at the bluff's edge, nothing could be grander in its way than the outlook on that wild day. Before me and below me, was a restless ocean of mad, swirling vapor. Save the misty tops of the evergreens, looming dimly up from below the cliff, no stable thing was to be seen. Furious masses of driving cloud were hurled up from below, as from an open boiling caldron, and rushed past me, who can say whither? There was no monotony in that fog. There was not only constant motion, but variation of depth, now hiding even the trees at my feet—now lighting up for a moment and disclosing far away in the valley a ghostly landscape, to vanish in a twinkling, as a dream vanishes. Somewhere in that chaos of fog, thunder was rolling, but no lightning penetrated the gloom. A path led part way down in part of the bluff to a wonderful wild garden, planted and watered by a greater than man. Here, close under the perpendicular cliffs, the fir trees stand, facing the western wind. Like giants driven to bay, they tower there with branches swept backward, and defiance in every limb. The face of the cliff is brilliant with the abundant yellow blossoms of the *Geum radiatum*, and of a dwarf golden rod, a span or two high. (*S. spithamæa*.) The wild gale tosses the plants this way and that, as though it would uproot them or break them in two; but they stand their ground manfully. On the ledges under the cliff, are *Heuchera villosa*, the purple Houstonia (*H. purpurea*,) and *Chelone obliqua*. The wind plays havoc with the exquisite rose-colored flowers of the last named, sometimes whirling them completely off, leaving only the bare rods and curved styles beaded with drops of moisture. Here, too, is an aster with lovely purple-tipped rays (*A. acuminatus*, probably); and a tall golden-rod (*S. Virgaurea, var. glomerata*,) with great heads of flowers, almost as large as a five-dollar gold piece. A rare Scirpus (*S. cæspitosus*) is here, too, growing in tough tufts on the wet rocks; while almost out of reach is that shy stonecrop, a denizen of Arctic shores and islands, *Sedum Rhodiola*, bearing a sessile bunch of reddish yellow bloom at the summit of its stalk. Nearby, under the shelter of a friendly boulder, is the graceful Summer Sedge (*Carex æstivalis*,) first recorded by a southern botanist, M. A. Curtis, though since found in the North, also.

THE GARDENS OF JAMES W. ELWELL, Esq., BROOKLYN, N. Y.—SEE PAGE 89.

Lack of space forbids the recital of a tithe of the interesting things to be seen on this fine old mountain; but before closing I cannot forbear mentioning the beautiful show made on

PHOTOCOPY OF ORIGINAL

the wooded slopes by the luxuriant growth of the Hobble Bush (*Viburnum lantanoides*,) with scarlet fruit and rusty-crimson foliage; and the umbrella-leaf, (*Diphylleia cymosa*,) with huge, long-stalked leaves, a foot or two across, and cymes of blue berries on red stalks; and last but not least, a golden-rod (*S. Roanensis*,) peculiar to this region, and first described in 1892, by Prof. T. C. Porter.

It is an interesting feature of the flora of the high mountain peaks of the South, that it includes many arctic and sub-arctic plants, separated from their fellows of the far north by a gap of many hundreds of miles. Several such are enumerated in the foregoing brief list, and constitute valuable evidence of the existence of a period many ages ago when, it is believed, a great part of our continent was buried under a vast sheet of ice and snow.

C. F. SAUNDERS.

Philadelphia.

HABITS OF THE TOAD.—It is remarkable that the toad, loving water as it does, should wander away from watery regions to dry ground, where it can never see a drop of water except at rain time, and leave its water rights to the undisputed possession of its ranal neighbor the frog. How the toad loves water must be known to every garden lover. Whenever there is a shower, the creature leaves its cool retreat under the piazza or shed, and stands, as far as his fore-legs will let him, erect in the rain, apparently enjoying to the utmost the shower bath.

Our remarkably observant correspondent, Mrs. Wilhelmina Seliger, of Hartford, Connecticut, placed shallow pans of water in her garden during a rain storm last summer, and soon a whole bevy of toads were disporting themselves in the water as if they were human beings in the surf at Atlantic City. Whenever they are near the water at breeding time, they deposit long slimy strings of eggs, and the young toad has to go through the tadpole stage in common with his brother frog. But when they are wholly excluded by distance from the water, they seem to have the power of being viviparous, or bringing forth their young alive. In the water, fertilization is effected in the same manner as in fishes, but the method in the land life career is not known. About all that is known is that confined toads are found with little toads, no larger than house flies, about them after a time,—and in walled gardens, and places far removed from water, little toads, no larger than peas, wandering around on their own resources, and which could never have been tadpoles, are within common experience.

SENSATION IN ANIMALS.—*Popular Science Monthly* contends for the probable existence of a sixth sense in animals. By this means, it would explain the wonderful ability of animals to find their way back to an original location. Migratory birds which travel from North to South and back again in the winter and summer time, can scarcely travel, as man would do, by the knowledge of land-marks alone. Large numbers of small birds that come from the South to the North every year, can scarcely fly high enough to be able to take in land-marks to any extent; yet it is certain that the same birds come these many hundreds of miles, backward and forward, to the exact locality that they tenanted, so to speak, the year before.

Horses, dogs, and cats, as is well-known, may be taken over long roads, and across fields and fences that they have never seen before; and yet be found at their old homes in a short time afterward. *Popular Science* gives an instance of a little pig, but three weeks old, that was carried in a sack for three miles. It was missed, and then tracked through the snow to its old home. It did not even follow the trail along which it had been taken, but took a nearly straight course, as was seen by the tracks in the snow through the woods. Many similar instances are given, showing that it is not by noting any especial points along the line of travel, but that there is some other medium by which animals are enabled to gain their desires.

SCENTLESS CALIFORNIA FLOWERS.—Beautiful flowers are very often scentless, and the absence of odor has been frequently remarked in connection with the many beautiful California annuals. Mr. Du Bois, however, in the *Asa Gray Bulletin*, contends that California can show a greater number of fragrant-leaved plants in proportion to the number of species than perhaps any other part of the world.

GENERAL GARDENING.

THE HUMMING-BIRD.

I have a cottage where the wild bee comes
To hug the thyme, and woo its dainties forth;
Where humming-birds, plashed with the rainbow's dyes,
Poise on their whirring wings before the door,
And drain my honeysuckles at a draught.
Ah, giddy sensualist, how thy blazing throat
Flashes and throbs, while thou dost pillage me
Of all my virgin flowers! And then away—
What eye may follow!

—GEORGE H. BOKER.

THE GARDENS OF JAMES W. ELWELL, ESQ, BROOKLYN, N. Y.—A correspondent sends, in a letter to the Editors, an interesting account of a visit made about New York, and to the gardens of Mr. James W. Elwell, of Brooklyn. From his letter, we make the following extracts: "I found in charge of this beautiful establishment, Mr. John A. Boyle, a young gardener recently from Newport, R. I., who seemed to be, in every respect, a thorough master of his profession. Very great attention has been given here to what is known as carpet bedding; and the photographs which I send will give you some idea of the appearance of the garden during the summer season. Some critics in the art of Landscape Gardening ridicule this method of garden ornamentation; but one thing is certain,—the vast majority of people are captivated by it. It is said to be artificial, and, therefore, unnatural. But surely a closely-mown plot of grass is just as artificial! And yet, there is no more beautiful object in gardening than a well-managed, evenly-cropped lawn. Mr. Boyle was preparing plants for this style of gardening for next year, and will have to get in readiness some sixty thousand plants, for all that will be required here.

The rose is a particular favorite in these gardens, and there is a large number of varieties grown. Roses under glass, for the use of the family and friends, are also grown to a considerable extent, the product of the present year being calculated at twenty thousand. One of the most remarkable of these is the green rose,—a variety which I remember as being grown, here and there, many years ago, simply as a curiosity. But Mr. Boyle finds it an admirable variety to mix in with others of high color; and an unopened bud of this green rose is strikingly handsome, among its congeners supposed to be more highly favored in the matter of color. There are orchid and palm houses, in which are some of the rarest kinds.

At the time I made my visit, some remarkable specimens of *Poinsettia pulcherrima* were at the height of their beauty. But among the many new kinds of plants, few made a more brilliant showing than the older varieties. Such things as Chinese Primroses, Calla Lilies, Hyacinths, Narcissuses, Lilies of the Valley, and, our old friend, the Canary Broom, testified to the fact that these kinds cannot yet be spared from good collections. The same fact holds good among the orchids, for, although many of the newer kinds were among the collection, none of these attracted more attention than the *Cypripedium insigne*.

The proprietor of this beautiful place, Mr. Elwell, is passionately fond of flowers; and, for over fifty years, he has made a practice of wearing, to his office every morning, a boutonniere made up of flowers of his own growing. Although over seventy years of age, he still attends to his business; and one of the things that residents in that section would miss would be the pleasant gentleman with the flowers on his coat-lapel, should he retire from his regular pursuits. He is not only fond of his garden for his own sake, but is never happier than when he knows that others have visited his grounds, and enjoyed his work equally with himself."

THE ELM-LEAF BEETLE.—The Elm-leaf Beetle is one of the greatest scourges to the elm,—and a great annoyance to the lover of trees. It has become almost impossible to succeed with the European species of elm. The beetles skeletonize the leaves, and these fall to the ground about mid-summer. A new set of leaves follow, but this new growth does not ripen properly and the trees soon commence to

PHOTOCOPY OF ORIGINAL

decay. The American Elm is also skeletonized, but the leaves do not fall in large numbers. The tree does not suffer materially, but the appearance of the tree with its perforated leaves is distressing, and the tree must suffer in time. A knowledge of the life-history of the insect which causes the trouble will have a vital interest to our readers, and we give the following abstract from the "United States Year-book of Agriculture:"—

"The Elm-leaf Beetle passes the winter in the adult, or beetle, condition in cracks in fences or telegraph poles, under the loose bark of trees, inside window blinds in unoccupied houses, in barns, and, in fact, wherever it can secure shelter. As soon as the buds of the trees begin to swell in the spring the beetles issue from their winter quarters and mate, and as soon as the buds burst they begin to feed upon the leaflets.

This feeding is continued by the beetles until the leaves are fairly well grown, and during the latter part of this feeding period the females are engaged in laying their eggs. The eggs (fig. 85, *c*) are placed on the lower sides of the leaves, in vertical clusters of 5 to 20 or more, arranged in two or three irregular rows. They are elongate-oval in shape, tapering to a rather obtuse point, orange yellow in color, and the surface is covered with beautiful hexagonal reticulations. These reticulations, however, can be seen only with a high magnifying power.

The egg state lasts about a week. The larvæ (fig. 85, *d*) as soon as hatched feed on the under surface of the leaf, gradually skeletonizing it. They reach full growth in from fifteen to twenty days, and then either crawl down the trunk of the tree to the surface of the ground or drop from the extremities of overhanging branches. At the surface of the ground they transform to naked, light orange-colored pupæ (fig. 85, *g*), a little over a quarter of an inch in length, and in this stage they remain for from six to ten days, at the expiration of that time transforming to beetles. The pupæ will frequently be found collected in masses at the surface of the ground in this way. On very large trees with shaggy bark many larvæ will transform to pupæ under the bark scales, or on trees of the largest size they may descend the main branches to the crotch and transform unprotected in the hollow of it.

Remedies.—The only thoroughly satisfactory safeguard against this insect consists in spraying the trees with an arsenical solution. The only other remedy which is worthy of mention is the destruction of the larvæ at the surface of the ground before or after they transform to pupæ.

The writer's experience at Washington leads to the conclusion that it is important to spray trees once just after the buds have burst. A second spraying should be conducted two weeks later. This is directed against the larvæ, the majority of which will perhaps have hatched by that time or soon after. A third spraying, and even a fourth, or under exceptional circumstances a fifth, may be required if it is considered necessary to keep the trees fresh and green, and particularly if the earlier sprayings have been followed by rains, as is apt to be the case in the earlier part of the season. Three thorough sprayings of all the trees in a given precinct will probably be as much as will be required, especially if this be done year after year and some pains be taken to destroy such of the larvæ as may successfully develop and descend for transformation. Even two sprayings, covering all the elms of a city or town, will be well worth the expense.

The substance to be used in these spraying operations may be Paris Green, London Purple, or Arsenate of Lead.

The other remedy—the destruction of the descending larvæ and the quiescent pupæ—is, as above stated, and must always be, incomplete. The standard kerosene emulsion, diluted one part to five parts of water, will destroy the insects in either of these stages. It must be applied to the base of the trunk and under the entire limb spread of the tree. The rough bark must be removed to a slight extent (the writer does not advocate severe scraping), leaving as few crevices as possible which may harbor the pupating insects. If a tree is very large, it will pay occasionally to climb into the main crotch and destroy such individuals as may have collected at that point."

FOREST FIRES.—Forest fires seem to have been more numerous and destructive the past spring than ever. It is remarkable, that with all the growth of forestry interest, the grand point fails to strike; the gunpowder-like underbrush is as much to blame as the firing of it.

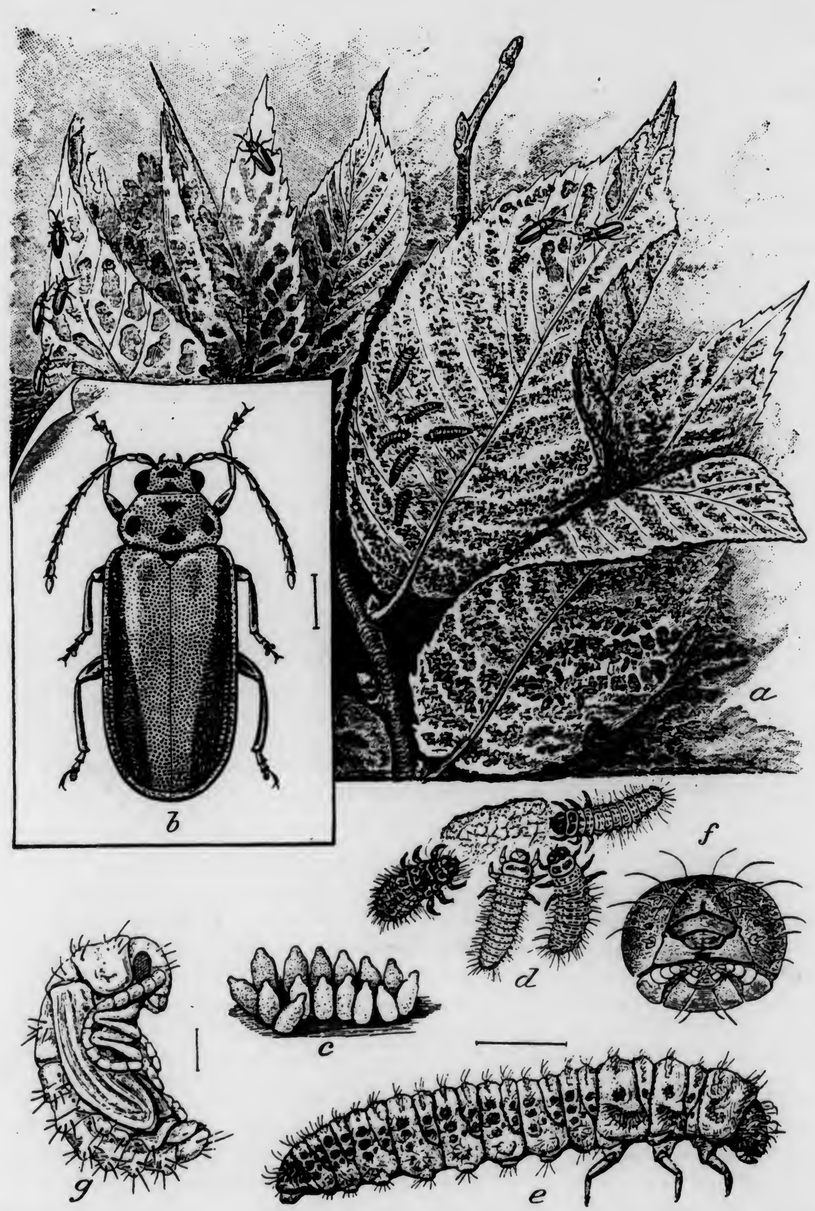


FIG. 85.—The imported elm leaf-beetle (*Galerucella luteola*). *a*, foliage of European elm showing method of work of beetle and larva—natural size; *b*, adult beetle; *c*, egg mass; *d*, young larva; *e*, full-grown larva; *g*, pupa—all greatly enlarged; *f*, mouth parts of full-grown larva - still more enlarged (original).

PHOTOCOPY OF ORIGINAL

GROWING ROSES UNDER GLASS.—In the early days of cut flowers, carnations and roses were planted in the ground and on benches. The plants were kept for an indefinite number of years. They were retained, in fact, until they showed signs of decline. There came a time when it seemed to be proved that much better results could be obtained by having a new crop of plants every year. Plants raised one year furnished the material for the following crop the next winter. The following summer they were all torn out and replaced by young ones. Some experienced rose growers are now doubting whether this is the best policy. Among those, as we understand it, is Mr. John A. May, one of the most eminent of cut flower florists in our country. When they are carried over in this way, he recommends that they should be watered, when growing vigorously, with a solution of sulphate of ammonia; this of course to be applied only occasionally. He would use 2 pounds of the solution to every 100 gallons of water.

SYSTEMATIC GARDENING. — The care of grounds, be it by an employed gardener or the owner himself, may be made a discouraging burden or a delight, the main dependence being on the working system. A pocket memorandum book should be the gardener's constant companion, in which notes may be made of the various things to be done, as their necessity may be seen. If such notes were made from time to time, it would be found that the work was progressing to greater advantage. Without such memoranda, the memory is solely relied upon, and, as we all know, this is often a poor servant. The man who thus works on from day to day, at this and that, with no definite idea of what he will have to do, and the time in which he will have to accomplish it, may be losing opportunities that will not again present themselves, or if they do it must be done at increased expense or labor. But with his notes before him, the gardener can so arrange his work as to make one thing fit in with another, approximate the time it will take, always allowing for work which has not yet been thought of, and, if necessary, the cost. He may see that a larger force of men will be required, or that which he has could do more, and so provide for the emergency. Looking ahead, he can see that something which might otherwise have been done at once can be well, perhaps, better-done at another time, and more pressing work substituted. This is but a principle on which any good business should be worked, but in the garden it is apt to be overlooked because of the various needs, many of which present themselves without notice; such oversight merely encourages carelessness, which only the methodical gardener can dispel.

SUMMER PRUNING OF TREES AND SHRUBS.—With the approach of the spring season, it is well to remind our readers of former reasons given regarding the advantage of summer pruning. If plants could be properly pruned in the summer, they would need but very little pruning in the winter time. In many cases, they would need no pruning at all in winter. All we have to remember is, that by pinching and cutting out very strong and undesirable growths, extra strength is given to the weaker ones. Every observer must have noticed that the strongest growth is always at the top of the plant. The lower branches are always the weakest ones. If we check this strong upper growth, the lower branches gain a strength which would otherwise go to the top. This is the great secret in trimming hedges. The general evil in the hedge is, that in the course of time, all the growth is at the top, while the lower portion of the hedge is naked; and thus it ceases to be a pleasure. If such a hedge had been cut at the top early in the season, soon after the young growth was made, the lower portion would be as thick as the upper. Nothing shows better the intelligent skill of the gardener than a hedge which has the lower branches just as densely thick and healthy as the upper ones.

In evergreens, grown as specimen trees on lawns, we find excellent illustrations of this lack of pruning, with all the strong branches at the top, and at the bottom a very few weak ones. The great beauty of evergreens consists in having a good healthy foliage to the ground. The nakedness referred to could have easily been avoided by checking the strong growth at the ends of the branches. The finger and thumb are the only pruning implements required in these cases. Pinching out the ends of the very strong shoots towards the top, when these young growths are from three to four inches long, is all that is required. Even a leading shoot in a Pine tree may be pinched back at this period, as a new leading bud will be formed at the point where the pinching occurs. A check to the upward flow of the sap is all that is necessary. This lesson may be carried to the orchard, as well as practiced in the flower-garden. No one shoot should be allowed to become more vigorous than another; and pinching back, or even taking out entirely, the strong growths, will accomplish this. One must not forget that the phrase "early in the season" means a great deal. Nothing is gained if the work is deferred until the young growth is matured.

NEW OR RARE PLANTS.

TAGETES SIGNATA PUMILA is a highly valued annual plant for borders. It can be kept 5-6 inches high by trimming. The small yellow flowers and the beautiful color of the dainty green will be admired by everyone. It can be sown right on the border and thinned out 3 inches. In front of evergreens or shrubs it will always be a success,—and stands dryness and heat very well. A. MILLARD.

BEAUTIFUL CALIFORNIA PERENNIALS.—Dr. Franceschi, of San Diego, says of some beautiful perennials of California worth experimenting with for garden culture, there are:

"*Leptosyne maritima*, with large golden flowers and everblooming; *Lathyrus splendens* displaying its bright crimson pea-shaped flowers from October to May; the scarlet larkspur, *Delphinium cardinale*, a summer bloomer; the *Zauschneria*, or California Fuchsia intensely scarlet too and blooming in the fall."

EVERBLOOMING MULTIFLORA ROSES. — Among the novelties announced in Europe is a new race of roses, from the *Rosa multiflora*. The varieties have assumed an everblooming character.

BOCCONIA CORDATA.—This new introduction from Japan is a striking ornament in the flower garden. Its large, glaucous leaves are peculiar, and the flower-like panicles of flowers attractive,—but it has to be planted where its roots will not be troublesome, as every little portion grows and becomes an independent plant when separated from the parent.

MALCOLMIA FLEXUOSA.—A St. Louis correspondent says: "I enclose, for determination, a little crucifer which we grew in our garden for the first time last year, and which we find makes a pretty winter window plant. It was grown from seed from the Department of Agriculture, but in some way the name was lost and I cannot trace it in any of my botanies. Will you do me the favor to name it?"

This is *Malcolmia flexuosa*, an Asia Minor plant, that we did not know was introduced to cultivation. It is not far removed from the Wall-flower, or Stock-gilly, botanically; but has more of the habit of a Sweet Alyssum. It deserves to be a popular window and general garden plant.

PRUNUS DAVIDIANA.—Franchet, the French botanist who is an eminent authority on the plants of China, has named a small tree from the North of China, *Prunus Davidiana*, and which has recently been introduced into American gardens. It has a historical as well as botanical interest. No one knows how the garden Peach originated. It was in the gardens of the ancient Greeks and Romans, and this is all we know. European botanists incline to the belief that this *Prunus Davidiana*, is but a variety of *Prunus Persica*, the peach, or rather that the peach is derived from this wild species. If this be so, the peach has wandered considerably from its ancestral characters. The whole appearance of the wood of the tree is that of the plum,—and, like the plum, the flowers open long before any variety of peach. In the Meehan nurseries the tree was in full blossom in the last week of March with peach flowers apparently a couple of weeks behind. At this writing there has been no opportunity of examining a fruit.

COBÆA SCANDENS.—The number of perennial climbing vines suitable to train on latticework is comparatively small; and, for variety's sake, we have to fall back on annuals of rapid growth. Large numbers of these will cover a space of one hundred square feet, or more, in a very short time, and fully compensate, by their handsome flowers, for the lack of vegetation in the winter season.

PHOTOCOPY OF ORIGINAL

the most interesting of these is the well-known *Cobæa scandens*. Its large, purple, bell-shaped flowers are always admired. A new species has been introduced by the seedsmen this year, called the *Cobæa macrostemma*. The name signifies "large stamens"; and it is, indeed, very striking on this account. the stamens projecting more than double the length of the corolla, and looking, for all the world, like the long legs of a spider. Only for the fact that there are already so many plants with the common name of "spider-flower," this might well be given that appellation.

THE HARDY FLOWER GARDEN.

THE WINTER ACONITE.—A correspondent calls attention to the value of the Winter Aconite, *Eranthis hyemalis*, for growing under the shade of trees in a wild garden. Long before the violet has filled the winds of March with fragrance, the Winter Aconite makes the surface of the ground gay with its golden buttercup-like blossoms. When once planted it takes care of itself, the patches becoming larger from year to year. In old Bartram's garden, they used to be there by the thousands, and a few are still left in spite of renovating operations since its purchase by the city of Philadelphia.

RUDBECKIA SPECIOSA.—In the Synoptical Flora of Dr. Asa Gray, the *Rudbeckia fulgida*, as figured in Meehans' "Flowers and Ferns of the United States," is regarded as erroneous, and should have been named *Rudbeckia speciosa*. On this judgment, a figure of a recognized specimen of *R. fulgida* has recently been given in MEEHANS' MONTHLY; Dr. Baker now says in the *Gardeners' Chronicle* that any broad difference between the two species may well be doubted.

HYACINTHUS (GALTONIA) CANDICANS. — A bulbous Hyacinth, well worth growing for cut flower purposes. If sown in pots, boxes, or frames, and transplanted in May in the open ground, it will bloom the first year. The flowers are white on two feet long stems, resembling a single flowering Tuberose. Over winter keeps well outside, if protected with leaves or straw. A. MILLARD.

FRUITS AND VEGETABLES.

BORERS IN FRUIT TREES.—The apple, quince, peach, and plum, are especially liable to injury from insects which bore into the bark and wood at or just below the surface of the ground. These may be guarded against by painting the tree, at the place attacked, with pine tar. Some authors complain of injury to the tree from this application, but this has not been the writer's experience. Coal tar is certainly very often injurious; but no bad results have ever followed the use of pine tar. If, however, there should be any fear of this proving deleterious, wheel-grease, which is a mixture of pine-tar and lard, is certainly safe. One has to be sure that there are no insects in the tree before the application is made. A slim penknife or a light wire will aid in this investigation.

WILD FRUITS OF THE CANADIAN NORTHWEST.—Dr. Wm. Saunders, finds the Plum *Prunus americana* as perhaps the most important of the wild fruits of the Canadian Northwest, as it is capable of a wide range of improvement. Those of less importance are the Wild Red Cherry, *Prunus Pennsylvanica;* the Western Choke Cherry, *Prunus demissa;* the Sand Cherry *Prunus pumila;* two Currants, *Ribes floridum* and *R. Hudsonianum;* two Gooseberries, *Ribes setosum*, and *R. oxyacanthoides;* Indian cherry, *Amelanchier alnifolia*, Buffalo berry, *Shepherdia argentea;* Red Raspberry, *Rubus strigosus;* Wild Strawberry, *Fragaria virginiana;* Huckleberries, *Vaccinium myrtilloides*, and *V. ovalifolium;* *Oxycoccus palustris*, one of the Cranberries, the two High-Bush Cranberries, *Viburnum Opulus*, and *V. pauciflorum;* and the Wild Frost Grape, *Vitis riparia*.

THE SPINELESS GOOSEBERRY.—It is conceded that a rose, without thorns, will smell as sweet as one with them,—and surely a gooseberry, without spines, would be no less grateful. Indeed, the thorns of the gooseberry form one of its objectionable features. The new race of spineless gooseberries marks a new era in fruit garden culture. To an American, especially, who firmly believes that time is money, it is profit to have the time spent on avoiding spines spent on gathering the fruits.

HARDINESS OF VARIETIES.—There is in all plants a line of variation. No two plants are exactly alike, no two leaves are exactly alike, and even in the parts of the flower, there is some variation to be noted. But these variations are within a certain limit, beyond which they cannot go. The hardiness of individuals of a species is subject to the same law of variation. There are different degrees of hardiness, just as there are different degrees in the other characteristics; and this is shown even in the common Purslane of gardens, which seem to be injured by the first white frost. A few plants will be hardy enough to escape the first light attack. This variation, however, is limited to two or three degrees. In trees and plants of an arborescent character, the limit will often extend to several degrees; and it is in this particular line that improvers look for hardy varieties. When we speak of hardy apples, cherries, pears, and similar fruits, we simply mean that we are welcoming improvements among those which have reached the extreme limit of hardiness. This principle is not generally recognized. There is really no such power in acclimatization as people imagine; for no fruit or flower can develop to any greater extent than is provided for in the constitution of the species. We may get some varieties of tomatoes or some varieties of potatoes that will stand one or two degrees more than we have been accustomed to observe; but to get a potato or tomato that will stand eight or ten degrees of frost is, we may safely avouch, an absolute impossibility.

HORNED ORANGES.—The Chinese are very fond of monstrous forms of fruit and flowers, and any departure from the normal form is usually cherished and highly valued. In their gardens, they have numerous forms of monstrous oranges,—some will produce fruit with points like fingers, and are known as the Hand Orange. Another form has a long horn projecting from the apex, and they are known as the Horn Orange. Another variety, which botanists have known by the name of *Citrus aurantium distortum*, bears a fruit in the resemblance of a cluster of sea shells. To one ignorant of the laws of vegetable morphology, these spells of wandering from the normal type are very mysterious; but when it is understood that all parts of the orange, as well as other fruits, are made up of what would have been leaves or branches changed so as to constitute the various parts of the seed and seed vessels, and that a very little difference in the degree of life energy will change them into various different parts that come to make up the fruit, the mystery in a great measure is solved. There are few branches of botany which give the lover of fruits and flowers so much pleasure as the study of morphology.

THE ARTICHOKE.—The globe artichoke is no food to set before a hungry person, but it is still a delicious morsel on the table of an epicure. It is rarely seen, however, among the numerous articles which are at the command of an English cook. In California, however, they can be readily enjoyed, being rather common in the markets of their larger cities. Their rarity in the east is probably owing to the fact that they are not very hardy, and are easily killed by our severe winters.

The part used is the flower head, and it is the art of the gardener in the Old World to get these heads as large as possible. For this purpose they are planted in particularly rich earth; nothing is considered too good for the artichoke. They are frequently raised in the Old World 6 inches in diameter.

They belong to the thistle family, and it is the outer scales of these thistle-like heads that are used. The lower portions of the scale are the edible parts. The scales are torn apart and the lower portions eaten.

THE ELEANOR STRAWBERRY.—One of the most valuable strawberries ever introduced was the Albany Seedling, or, as it was sometimes called, Wilson's Albany—or Wilson. It is one of the most abundant producers ever discovered, and found well adapted to a great range of conditions. No strawberry had so wide a popularity; but eventually the strawberry fungus known as the spotted leaf found its home on it, although it resisted the efforts of this fungus for a number of years. It has now almost entirely disappeared, The western strawberry growers believe that a new variety, introduced by Mr. Whitten, of Bridgeman, Mich., will fill the place formerly occupied by the Wilson. Of course it remains to be seen whether the results justify these conditions.

PHOTOCOPY OF ORIGINAL

DESTRUCTION OF INSECTS IN THE GARDEN.—Familiar as many of us are with the wide diffusion of agricultural and horticultural papers, it yet seems that the progress of knowledge throughout the community is extremely slow. In the vicinity of Philadelphia, and it may be presumed it is so elsewhere, the Arborvitæ especially, and many other trees, are completely destroyed by the Bag Worm. No one can mistake this creature. It builds for itself a sack-like house out of the leaves of the tree on which it feeds, which house it carries with it in its journey to different parts of the tree for food. In a few weeks they will sometimes entirely strip the tree of its foliage. When it is remembered that these creatures can be readily picked by hand from the tree, and that even a tree of considerable size can be cleared of them in a short time, it is amazing that ignorance of this simple fact permits so many handsome trees to be destroyed. If even a tree should be large enough to be beyond reach of hand picking, they can be readily destroyed by spraying with a solution of Paris Green. And it seems surprising that, with the general knowledge of this fact, so many people should seem in utter ignorance as to how to prevent the destruction of trees and bushes which they so much prize.

The writer of this paragraph was recently in the garden of a party who prided himself on some dozen pear trees, which composed about the whole of his little orchard, as he called it. He had been looking forward for some years to their bearing, and for two or three years had enjoyed the fruit. To use his own expression, "he would not part with them for love or money," yet these so highly valued trees were completely skeletonized by this very Bag Worm. A few cents worth of Paris Green, and with the use of a sprayer, this would be an effectual preservative.

ONION GROWING.—Those who grow onions in beds, in amateur gardens, must have noted that, when a few seeds get scattered on a patch of ground that has been tramped hard and solid, the result is a crop of onions much larger and finer than those grown in the looser soil devoted to the onion bed proper. This would certainly indicate that well-compacted soil is preferable for the greatest success in onion-culture. In many parts of America, however, the onion is permitted to have two seasons for its full development. They are sown comparatively late in the spring, and mature by mid-summer; making bulbs about the size of large marbles, which are known as onion-sets. These are then replanted the following spring, and grow to a large size by mid-summer, when they again mature. But the fact that we have noted in relation to compact soil, ought to be as true of the onion sets as of the plant which grows in a single season to its maturity.

THE NAVEL ORANGE.—There is a rivalry between Florida and Southern California as to which produces the most toothsome Navel Oranges. That they are produced of admirable quality in Southern California, is too well known to be disputed; but the Florida planters contend that the reason for this distinction is, that so many more of this kind are planted in California than in Florida, and, as a consequence, Californians have a better opportunity in selecting the best. Undoubtedly Navel Oranges of admirable quality come from Florida at times as well as from the West.

BEN DAVIS APPLE.—In some portions of New York State, the Ben Davis Apple is planted more largely than any other variety. It is not an apple of high quality; but still it is fairly eatable, and those who buy it once do not hesitate to buy it again; but the chief reason for its popularity is that it is an abundant bearer, and bears regularly good crops, and besides is showy and attractive. It will keep fairly well until past mid-winter.

SUMMER PRUNING.—Early summer is a good time to prune fruit trees provided the pruner is a person of good judgment. Weak half-dead branches should be cut out. This admits more light and air to the healthier leaves and branches which are rendered more healthy and vigorous by not having to congregate with the poorer class.

THE GARBER PEAR.—The Garber Pear does not appear to be known anywhere in the East, but in Minnesota it is recorded as one of their great standbys. It is said to be remarkably healthy and well suited to that Northern region.

BIOGRAPHY AND LITERATURE.

MAY FLOWERS.

"Youth's folk now flocken everywhere,
To gather May-baskets and smelling breere;
And home they hasten the posts to dight,
And all the kirk-pillars ere daylight,
With hawthorn-buds; and sweet eglantine,
And garlands of roses, and sops-in-wine."
—SPENSER.

LOCAL BOTANY; DR. IDA A. KELLER.—The advance in facilities for modern travel is well illustrated by a circular on the table from Dr. Ida A. Keller, Professor of Chemistry, in the Girl's High School of Philadelphia, that she is preparing a catalogue of the plants growing within a circuit of one hundred miles around that city. When some of us were active collectors, a flora of twenty miles around any one centre, would be the height of an author's ambition. Dr. Barton had "a flora of twenty miles around Philadelphia" but his stations are now nearly all covered by bricks and mortar. In these days of steam and electricity a hundred miles can be examined in less time and at less cost than twenty could in the beginning of the century. Check lists can be had from Dr. Keller for the use of any one disposed to note locations. The lady is equally known as a profound botanist and successful teacher of chemistry, in the same institution from which she graduated in 1883.

From 1884 to 1886 she was a student in the Department of Biology in the University of Pennsylvania, and the year following was assistant in the Herbarium at Bryn Mawr College.

From 1887 to 1889 Dr. Keller was a student at the University of Leipzig with Professor Wilhelm Pfeffer, the leading plant physiologist of the day, in botany, and with Professor Friedrich Stohmann in chemistry. In 1889 to 1890 she was a student at the University of Zürich, where she received the degree of Doctor of Philosophy.

The two years following Dr. Keller was lecturer in botany at Bryn Mawr College, and from 1893 to the present has been teacher of chemistry at the Girls' High School.

NOMENCLATURE OF THE ARBORESCENT FLORA OF THE UNITED STATES, by Geo. B. Sudworth. Issued by the United States Department of Forestry.

Nurserymen and garden lovers generally will appreciate this excellent work, which is a marvel of patient industry and research. Some botanists, in their laudable desire to establish an unchangeable nomenclature, have not waited for general assent to changing the present order of things. Some are adopting one name and some another. Nurserymen and garden lovers find themselves in a babel of confusion, and do not know what their neighbors and correspondents are talking about. Professor Sudworth, in this work, gives all the names that have ever been applied to any tree, and we can thus find out, if we do not already know. The book can be obtained free through congressmen.

THE NORWAY PINE.—The name of Norway Pine has been given as *Pinus resinosa*, which is one of our best coniferous timber pines in the Northern States. It is also frequently called the Red Pine. If it were at all possible to change common names, it would be much better to adhere to the latter rather than the former name. Norway Spruce is so well known by this name that it would be very difficult to make distinction between Norway Pine and Norway Spruce. It is, however, as we already know, very difficult to get any universal recognition of a proper name.

LIFE OF DR. I. A. LAPHAM.—Miss Julia Lapham, of Oconomewoc, Wisconsin, is preparing for the press, in two volumes, the life and correspondence of her illustrious father, Dr. Increase Allen Lapham.

OLMSTED OLMSTED, & ELIOT.—By the untimely death of Mr. Charles Eliot, the junior member of the well-known firm of Landscape gardeners, the firm name will in future be F. L. & J. C. Olmsted.

PHOTOCOPY OF ORIGINAL

THE LADY FERN.—In your notes on the Lady Fern, which I have just read, I note that you say in substance that it is singular that this fern, so long and favorably known, should have found no place in poetry and polite history, more than is given to ferns in general.

I hasten to call your attention to one poem on this fern which you have doubtless overlooked; but which, to my mind, is one of the most exquisite things ever written about any fern. It is said to be by Calder Campbell. For fear that it may not be at hand, I enclose it,—or a transcript of part of it,—herewith:

If you would see the Lady Fern
  In all her graceful power,
Go look for her when woodlarks learn
  Love songs in a summer bower;
When not far off, nor yet close by,
  A merry stream runs on,
Just near enough for an old man's eye
  To watch the waters run,
And leap o'er many a cluster white
  Of Crowfoots o'er them spread;
Where Hart's-tongues quiet, with green more bright
  And the brackens make their bed
Ferns all—and lovely all—yet each
  Yielding in charms to her,
Whose natural graces Art might teach
  High lessons to confer.

Go look for the Pimpernel by day,
  For Silene's flowers by night,
For the first loves to bask in the sunny ray
  And the last woos the moon's soft light;
But day or night the Lady Fern
  May catch and charm your eye
When the sun to gold her emerald's turn
  Or the moon lends her silvery dye.
But seek her not in early May,
  For a Sibyl then she looks
With wrinkled fronds that seem to say
  "Shut up are my wizard books."

Then search for her in the summer woods
  Where rills keep moist the ground,
And Foxgloves from their spotted hoods
  Shake pilfering insects 'round:
Where up and clambering all about,
  The traveller's joy flings forth
Its snowy awns, that in and out
  Like feathers strew the earth.

Fair are the tufts of Meadow-sweet
  That haply blossom nigh.
Fair are the whorls of violet:—
  Prunella shoes hard by.
But not in burn, in wood or dale,
  Grows anything so fair,
As the plumy crests of emerald pale,
  That wave in the wind or sough in the gale,
Of the Lady Fern, when sunbeams turn,
  To gold her delicate hair.

I think these verses are worthy of preservation in a magazine like yours, which aims to see something *more* than science in nature about us.

With regard to the speculations as to the origin of the name Lady Fern, I should like to inquire whether this might not have been originally Our Lady's Fern. A great many beautiful flowers have been dedicated to the Virgin,—as Lady's Slipper, Lady's Mantle, etc. Should the old botanists have cast about for a fern to dedicate to her, they could scarcely have hit upon a more graceful and interesting plant to bear the honor.

A most characteristic place for this fern, in some sections, is along roadside fences, especially if the latter are somewhat neglected. The bright light to which it is usually subjected in such situations causes the fronds to assume a shape quite unlike the woodland form, but fully as interesting.

WILLARD N. CLUTE.

Columbia College, N. Y.

THE PALMETTO STATE.—The origin of the State arms of South Carolina is thus given in the histories: "On June 28, 1776, a force of less than one hundred Carolinians, under command of Moultrie, protected by the rude fortification on Sullivan's Island in Charleston Harbour, made of the trunks of the Palmetto, repulsed the attack of a British fleet under command of Sir Peter Parker; and when the State of South Carolina was organized, the State-seal, which was first used in May, 1777, was made to commemorate this victory. A Palm-tree growing erect on the sea-shore represents the strength of the fort, while at its base an Oak-tree torn from the ground and deprived of its branches recalls the British fleet built of Oak timber, overcome by the Palmetto."

CITY FLOWERS.—A paragraph in a recent number of MEEHANS' MONTHLY attracted attention to the large number of species of plants which one might find in a lawn which had been prepared in the usual way, by sowing grass seed. Nearly every little patch, where introduced species can get a chance, will furnish similar effects. Some one has been collecting plants which grow spontaneously in the streets of Paris, and has found the number to reach 209. Nearly any large city will furnish similar illustrations.

A LADY LANDSCAPE GARDENER.—England boasts with some national pride, that she has a lady, Miss Wilkinson, who has achieved fame and a high reputation as a landscape gardener. Many of the London parks have been the products of her mind in designing, and deft hands in guiding them to completion. America is about to dispute the title of the Old World to a monopoly of this distinction. Miss Beatrix Jones, is already deemed a success in this line, and has been engaged in works requiring a high degree of knowledge of Landscape Gardening.

LOVE FOR TREES IN EARLY PHILADELPHIA.—In addition to the well-known fact that Penn gave tree names to the streets in his newly founded town, the following from April number of *Lippincott's Magazine* has an interest to the tree-lover:

"Even in those days Philadelphia carried on 'a great trade, both with the inhabitants of the country and to other parts of the world,' and though none but English ships were allowed to come into port, two hundred and seventy-three vessels arrived in 1746.

Provisions were plentiful and cheap. On his first arrival, Kalm says, 'I took up my lodging with a grocer, who was a Quaker, and I met with very good honest people in this house, such as most people of this profession appeared to me.' He and his servant were provided with a room, candles, beds, attendance, and three meals a day, for twenty shillings a week in Pennsylvania currency. But wood, washing, and wine were to be paid for extra. The professor mentions 'the good and clear water' in Philadelphia 'as one of its great advantages;' 'for though there are no fountains in the town, yet there is a well in every house and several in the streets, all which afford excellent water for boiling, drinking, washing, and other uses.'

Fuel was expensive, though Philadelphia was surrounded with woods. 'The great and high forests near the town are the property of some people of quality and fortune, who do not regard the money they could make of them,' he says. 'They do not fell so much as they require for their own use, and much less would they sell it to others. But they leave the trees for times to come, expecting that wood will become much more scarce.' The wood brought to market was from a distance, and everybody complained 'that fuel in the space of a few years was risen in price to many times as much again as it had been.' This was accounted for by the fact that 'the town is encreased to such a degree as to be four or six times bigger and more populous than what some old people have known it to be when they were young,' by the clearing of the country round, and by the great consumption of wood in burning bricks and smelting iron ore.

TURKEYS, AND HOW TO GROW THEM, by Herbert Myrick, published by The Orange Judd Co., New York.

It is not generally known that the turkey is an American bird. It was not known in Europe until after Columbus had discovered America. Besides being a native bird, it is of national importance, considering that, according to the United States Census of 1890, ten millions are raised every year, and that the trade in them exceeds twelve millions of dollars annually. Aside from the matter of profit, the turkey is a subject of general interest. This little book of one hundred and sixty pages treats of everything in relation to the turkey,—the past, the present, and, one might almost say, the future of the turkey! It will be read with both pleasure and benefit by all those who are interested in this beautiful and profitable bird.

THE AMERICAN FRUIT CULTURIST, by John J. Thomas, published by William Wood & Co., New York.—Twentieth Edition, "Thomas' American Fruit Culturists," is the great Text Book of American Fruit Culture that is universally in use. How widely it is depended on is no better certified to than by the fact that this is the Twentieth Edition! Few works of any kind in any country can boast of such a popular and useful career. Every edition is carefully brought down to the times, so that those who have the former editions need the latter. This edition is especially valuable on account of the chapter on spraying, an art that marks the present era as a golden one.

PROFESSOR EDWARD D. COPE.—Professor E. D. Cope, widely known for his scientific attainments, died in Philadelphia, April 12th.

PHOTOCOPY OF ORIGINAL

GENERAL NOTES.

REMEDIES FOR DISEASES.—In some respects human nature remains the same from age to age. In these days we laugh at the ancients who believed that because the leaves of the Hepatica had a liver-like look, it must be a good remedy for liver diseases. But things go much in the same way now. A noted physician once said to the writer of this paragraph, that nearly all the quack medicines for rheumatism, were preparations of iodine. "Then" was the reply, "Celery ought to be good for rheumatism, as there is much iodine in its composition." This reply was quoted in the public prints, and widely circulated. At once the country was flooded with celery-cure advertisements. Of other remedies, Mr. Newlin Williams remarks in *The Forester:*

"We know how, of late years, the witch-hazel has found a welcome place in every home on account of its inclusive therapy; but the chemist has been unable to discover any principle in it save a little tannic acid and a peculiar, characteristic odor. The fox-glove of Europe has been used in medicine from time beyond record, yet the more it is studied the less the therapeutists are able to definitely ascribe its valuable action to any of its recognized constituents."

A SPECIES.—What is or is not a species is a puzzle to some botanists. Prof. L. H. Bailey well remarks that "Species-making for ever enforces the idea of the distinctness and immutability of organic forms, but study of organisms themselves for ever enforces an opposite conception . . . . . A new species, therefore, is made simply for convenience sake—hence systematic botanists look askance at horticulture." This is akin to an observation of the late Dr. Asa Gray in the hearing of the writer of this paragraph that a species was "simply the opinion of an expert." For this reason what is or is not a species changes with the varying experiences of botanists,—and for this reason if for no other, synonyms in plant names will ever be unavoidable.

THE SEASONS FOR FLOWERING.—If you have the information suggested in the following, please kindly publish it in the next MONTHLY. If not, would it not be well to ask your numerous readers to procure you the data the coming season, and then arrange and publish it in some subsequent issue? The information suggested is this:

In the different portions of our country, the time of blossoming of the apricot, peach, plum, cherry, apple, dogwood, redbud, tulip tree, mock orange, lilac, snowball, althaea, hydrangea, etc. Such a list as you would know best how to prepare and submit to your readers. If only a small portion of them would answer, the data furnished could be arranged by you in a table which I think would be of much interest, scientifically and practically.

G. M. ALVES.

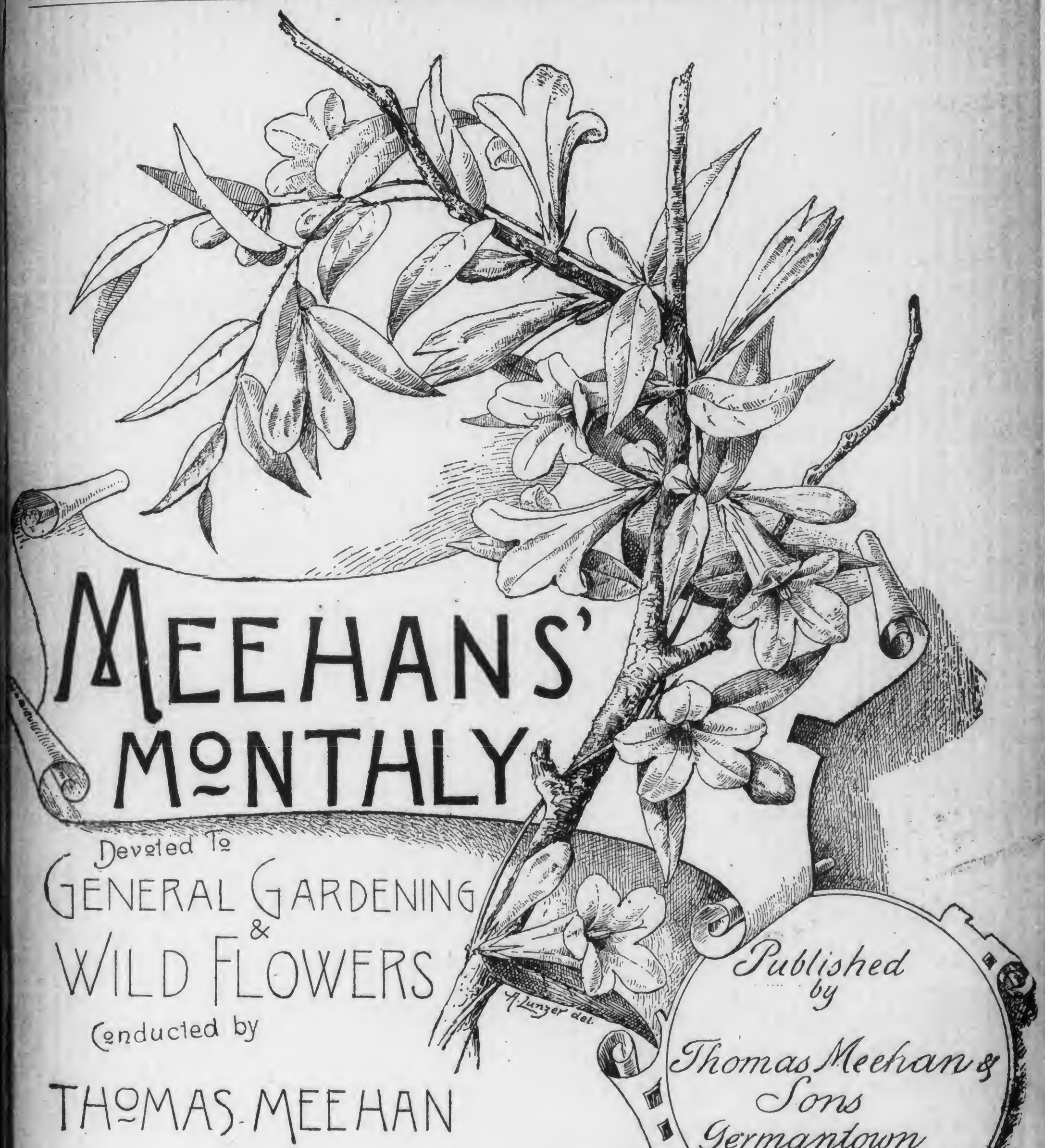
Henderson, Ky.

FRUIT TREE DISEASES AND STATE LAWS.—Mr. L. G. Young, Erie, Pa., calls attention to an effort to be made by the Pennsylvania Legislature, to enact a law for the protection of the plum and cherry interest against injury from the disease in the peach known as the "yellows," and in the plum and cherry from the "knot." He believes such a law as they have in Michigan, would be effective in Pennsylvania. MEEHANS' MONTHLY has little faith in any public legislation in the direction proposed. Intelligent fruit growers, who read and profit by what they read, know how to protect themselves to much better advantage than by a reliance on law. Instead of praying to Jupiter they set their own shoulders to the wheel. No law will make up for a lack of brain.

CALIFORNIA PRUNES.—The California Nursery Co., Niles, California, sends a sample of the dried Prune prepared from the Imperiale Epineuse. For size and beauty they can scarcely be excelled. It is pleasant to note the prosperity of these home industries.

VOL. VII JUNE, 1897 No. 6

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



MEEHANS' MONTHLY

Devoted To
GENERAL GARDENING
&
WILD FLOWERS

Conducted by
THOMAS MEEHAN

A. Lunzer del.

Published by
Thomas Meehan & Sons
Germantown
Philadelphia.

COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

Nuts for Profit, by John R. Parry. This book is one of the best of its class and one no person interested in nuts and nut culture can afford to be without. It is a complete work of 158 pages, and its 60 illustrations, taken direct from nature, are very accurate and useful. We furnish it, postpaid, for . . . **$1.00**

THOMAS MEEHAN & SONS, Publishers
Germantown, Pa.

SPRAYER and SPRINKLER

SIMPLEST and BEST DEVICE. -

For use at Country Seats, Large Estates, Manufactories. Also for Sprinkling Lawns, Private Grounds, Yards and Drives, Cemeteries, Carrying Water, etc.

STUDEBAKER "LITTLE GEM"

One Horse Farm, Garden, Flower-bed and Lawn **Sprinkler** (capacity 150 gal., 4 in. tires). Most practical device for the distribution of liquid manure, Paris Green or other liquid matter; for use of seedsmen, florists, nurserymen, farmers, celery and cotton growers. Can apply the stream directly on one or two rows at a time. **Will not clog. Easy to operate. Flow of water regulated from driver's seat.**

SPRAYER, PUMP, HOSE and NOZZLE

for **Spraying Fruit Trees, Vines** and **Shrubbery.** Does greatest amount of work at smallest cost. Least labor. Get our illustrated catalogue. Mention this paper.

Studebaker Bros. Mfg. Co.
SOUTH BEND, INDIANA
(The Largest Vehicle Works in the World.)
Branch: 564-566 Broadway, cor. Prince, N. Y. City

NOVELTIES IN PLANTS, FRUITS, ETC.
A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

Lotus of the Nile

Aquatic Gardening

Water lilies, Egyptian and Japan lotus, Victoria Regia. We carry a full line of **aquatics, Japan irises, Bamboos and hardy ornamental Reeds, Grasses and Perennials.** Plans and estimates furnished, and selections of varieties made upon request. See catalogue and separate water lily leaflet.

HENRY A. DREER, Philadelphia, Pa.

A material has been discovered for glazing which after thorough test has been proven far superior to putty, it is called

MASTICA.

Mastica is easier to apply and when once put on it stays. It is not affected by extremes of weather, and is thus especially adapted for greenhouses, conservatories, graperies, hotbeds, etc. Endorsed by prominent florists throughout the country.

Send for descriptive circular of **Mastica and Mastica Glazing Machines.**

F. O. PIERCE CO.,
SOLE MANUFACTURERS
170 FULTON STREET, NEW YORK

GRIFFITH TURNER & CO., 205 N Paca St., Baltimore Md.
EDWARD S. SCHMID, 712 12th St., N.W., Washington, D.C.
HENRY A. DREER, 714 Chestnut St., Phila., Pa.
HENRY F. MICHELL, 1018 Market St., Phila., Pa.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.
WM. WARNER HARPER, MANAGER

C. G. Van Tubergen, Jr, Haarlem, Holland
CHOICE DUTCH BULBS
AND ATTRACTIVE BULBOUS PLANTS
CATALOGUES FREE
C. C. ABEL & CO., Sole Agents, Box 920, New York

Vick's Flower and Vegetable Garden. A book of over 200 pages. Hundreds of illustrations and six colored plates. Full of practical directions for the cultivation of flowering, ornamental and kitchen garden plants. **$1.50**

THOMAS MEEHAN & SONS, Germantown, Phila.

ASK YOUR SEED DEALER FOR

SLUG-SHOT

TO DESTROY

Currant and Cabbage Worms, Potato Bugs, Cucumber Fleas, Rose Lice and Slugs, Lice on Cattle, Fowls, etc.

HAMMOND'S SLUG-SHOT — I SLAY BUGS — 1880 1892 — INSECTICIDE & FUNGICIDE

Trade Mark

SLUG SHOT stands to-day the most successful general insecticide in the world for use on VEGETABLES, FRUITS OR FLOWERS. It is put up in various sized packages to suit all wants. We prepare all sorts of INSECTICIDES and FUNGICIDES for spraying or in powder. GRAPE DUST—Powder for destroying Mildew on Roses and Gooseberries. If you have trouble with Insects or Blights, write and we will try to help you. Send a postal for pamphlet to **B. HAMMOND, Fishkill-on-Hudson, N. Y.**

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

CHRYSOPSIS VILLOSA

COLOR PLATE

CHRYSOPSIS VILLOSA.

GOLDEN STAR.

NATURAL ORDER, COMPOSITÆ.

CHRYSOPSIS VILLOSA, Nuttall.—A foot or two high; leaves from oblong to lanceolate, rarely few-toothed, usually cinereous or canescently strigose or hirsute and sparingly hispid along the margins and midrib, an inch or two long; heads mostly terminating leafy branches, sometimes rather clustered, naked at base or leafy-bracteate; involucre campanulate, four or five lines high; its bracts commonly stigulose-canescent, sometimes almost smooth, acute; akenes oblong-obovate, villous; outer pappus of chaffy bristles. Coulter's *Manual of Rocky Mountain Botany*. See also Gray's *Synoptical Flora*, Gray's *Manual of the Botany of the Northern United States*, Chapman's *Botany of the Southern United States*, and Wood's *Class-Book of Botany*.)

The earlier known species of plants now known as *Chrysopsis* were once classed with *Inula*, which is supposed to be an old corruption of Helena,—there being a legend that the original sprung from tears shed by the fair Helen of Troy. America's great botanist, Nuttall, first pointed out the differences, and gave it the name it bears,—a name derived from the prevailing yellow color of the flowers in the species forming the genus, and which has suggested the common name of Golden Aster or Golden Star. The true Asters—Michaelmas Daisies, as they are called in the Old World—have usually whitish or purple flowers, no true Aster with yellow flowers being known. It may be here noted that one of the difficulties in the way of getting popular common names to the plants of our country arises from the fact that there has been no effort to connect any popular event or person with the flowers, and thus the underlying sentiment which has given rise to so many popular names of the Old World is wanting. A large number of English popular names came from connecting the first blooming of the flowers with the days on which various saints were commemorated in the Catholic Church. In the Old World, as here, composite flowers of many different genera were known as daisies, and one species, commencing to flower on St. Michael's Day—Michaelmas Day,—gave the term Michaelmas Daisy to the whole family. As an old English ballad, called "The Calender of Flowers," aptly puts it,

> "Michaelmas daisies among dede weeds
> Blooms for St. Michael's valient deeds."

Some few of our poets have here and there clothed an American flower with a beautiful sentiment that has brought the flower prominently to the front. Everyone knows of the daisy,—the

> "Wee; modest, crimson tippit flower,"

of Burns,—and of the

> "—Twa who paddled in the burn and pu'd the gowans fine."

Americans, in common with thousands of others, will ever hold the poet in grateful remembrance who threw such delightful sentiment around a common weed.

Our *Chrysopsis villosa* differs from the Michaelmas Daisy of the ballad in not growing among "dede weeds," as well as in its golden color. The author's first acquaintance with it was in the early days of Colorado exploration, in what is now known as "the Garden of the Gods." A hole in a "beetling cliff" had invited deeper exploration, and while on hands and knees the plant was noted growing in the debris about the entrance, as if guarding the spot from too prying eyes. There were no other plants to interfere with it. Like the rose of Moore's ballad, it

> "—Stood blooming alone;"

and, wherever it was subsequently met with in after years, it was usually scattered in arid places where few others seemed to thrive as well. Our species has, however, a range wider than accorded to many other plants, being found northwardly in the region of the Saskatchewan and in British Columbia, while it is found as far southwardly as Arizona. In such a wide range it will most likely be found under other conditions.

Although the genus *Chrysopsis* was first founded by Nuttall in 1818, the species was first made known to us two years earlier by Pursh, who had it "from the Missouri," and who describes it as an *Amellus—Amellus villosus*,—a genus to which many an aster-like plant was referred, but which is now confined to a few species growing in South Africa. For

CHRYSOPSIS VILLOSA.

GOLDEN STAR.

NATURAL ORDER, COMPOSITÆ.

CHRYSOPSIS VILLOSA, Nuttall.—A foot or two high; leaves from oblong to lanceolate, rarely few-toothed, usually cinereous or canescently strigose or hirsute and sparingly hispid along the margins and midrib, an inch or two long; heads mostly terminating leafy branches, sometimes rather clustered, naked at base or leafy-bracteate; involucre campanulate, four or five lines high; its bracts commonly stigulose-canescent, sometimes almost smooth, acute; akenes oblong-obovate, villous; outer pappus of chaffy bristles. Coulter's *Manual of Rocky Mountain Botany*. See also Gray's *Synoptical Flora*, Gray's *Manual of the Botany of the Northern United States*, Chapman's *Botany of the Southern United States*, and Wood's *Class-Book of Botany*.)

The earlier known species of plants now known as *Chrysopsis* were once classed with *Inula*, which is supposed to be an old corruption of Helena,—there being a legend that the original sprung from tears shed by the fair Helen of Troy. America's great botanist, Nuttall, first pointed out the differences, and gave it the name it bears,—a name derived from the prevailing yellow color of the flowers in the species forming the genus, and which has suggested the common name of Golden Aster or Golden Star. The true Asters—Michaelmas Daisies, as they are called in the Old World—have usually whitish or purple flowers, no true Aster with yellow flowers being known. It may be here noted that one of the difficulties in the way of getting popular common names to the plants of our country arises from the fact that there has been no effort to connect any popular event or person with the flowers, and thus the underlying sentiment which has given rise to so many popular names of the Old World is wanting. A large number of English popular names came from connecting the first blooming of the flowers with the days on which various saints were commemorated in the Catholic Church. In the Old World, as here, composite flowers of many different genera were known as daisies, and one species, commencing to flower on St. Michael's Day—Michaelmas Day,—gave the term Michaelmas Daisy to the whole family. As an old English ballad, called "The Calender of Flowers," aptly puts it,

> "Michaelmas daisies among dede weeds
> Blooms for St. Michael's valient deeds."

Some few of our poets have here and there clothed an American flower with a beautiful sentiment that has brought the flower prominently to the front. Everyone knows of the daisy,—the

> "Wee; modest, crimson tippit flower,"

of Burns,—and of the

> "—Twa who paddled in the burn and pu'd the gowans fine."

Americans, in common with thousands of others, will ever hold the poet in grateful remembrance who threw such delightful sentiment around a common weed.

Our *Chrysopsis villosa* differs from the Michaelmas Daisy of the ballad in not growing among "dede weeds," as well as in its golden color. The author's first acquaintance with it was in the early days of Colorado exploration, in what is now known as "the Garden of the Gods." A hole in a "beetling cliff" had invited deeper exploration, and while on hands and knees the plant was noted growing in the debris about the entrance, as if guarding the spot from too prying eyes. There were no other plants to interfere with it. Like the rose of Moore's ballad, it

> "—Stood blooming alone;"

and, wherever it was subsequently met with in after years, it was usually scattered in arid places where few others seemed to thrive as well. Our species has, however, a range wider than accorded to many other plants, being found northwardly in the region of the Saskatchewan and in British Columbia, while it is found as far southwardly as Arizona. In such a wide range it will most likely be found under other conditions.

Although the genus *Chrysopsis* was first founded by Nuttall in 1818, the species was first made known to us two years earlier by Pursh, who had it "from the Missouri," and who describes it as an *Amellus—Amellus villosus*,—a genus to which many an aster-like plant was referred, but which is now confined to a few species growing in South Africa. For

COLOR PLATE
INTENTIONAL SECOND EXPOSURE

all its wide range, it has not attracted any special attention from the compilers of local floras. Dr. Engelmann, in 1842, notices among the plants collected by Geyer, that it was growing at Beardstown, Kentucky,—and James Hyatt records that it flowers about the middle of August, in the upper part of Lake Michigan. These points mark about the eastern limits of its range.

The student of plant-life would probably find much of interest in a special study of the plant. A plant of the same natural order—a *Silphium*, popularly known as the Compass Plant, twists the plane of its leaf vertically, instead of horizontally as in most plants; and generally the edges of the leaves are in a northwardly and southwardly direction, thus suggesting the popular name. But many plants of the order turn the whole or a portion of their leaves to a vertical position, though north and southwardly directions are not marked. In the plant here figured, the vertical position of the upper portion of the leaf is strongly pronounced, as in Fig. 4. Every leaf is twisted with so much regularity as to attract particular attention. Some have suggested that this is a special provision for protecting the upper portion of the leaves from the strong light of a mid-day sun, though the author believes that the spiral growth which we know attends the building up of stem-structure follows the leaves to a great extent, in many cases, and that the twisting is of no physiological value.

The natural order of plants to which this *Chrysopsis* belongs is particularly rich in illustrations of leaf-coilings, following an energetic wave of spiral growth, and which often results, as already noted, in leaves having their edges in a vertical instead of the usual horizontal position. In many of the *Lactuca*, or Lettuce family, this is often strikingly evident, and it is especially prominent in *Liatris* and its allies. In these cases, there seems to be but a single twist near the base of the leaf stalk before the coiling movement is exhausted. In *Liatris*, and some members of the thistle family, the leaves will make a double twist. After they have become vertical, they continue the spiral movement until the upper portion of the leaf resumes what may be termed the normal, horizontal form. It presents a very pretty and instructive study, showing, as it does, that the spiral method of development, recognized as the law in stem structures, is also a feature to a great extent in leaf-structures. Though this truth is illustrated so well by these members of the natural order *Compositæ*, members of other families afford similar evidence. The common daffodil, and other species of the Narcissus tribe, carry the spiral growth in the leaves to such an extent that there are several series of the horizontal and vertical positions in a single leaf.

The study of the leaves of *Chrysopsis*, in connection with the popular error of polarity in these vertical stages of leaf-development, will be found a very enjoyable one. We reach the profitable conclusion that it is not safe to form deductions as to special laws from observations of a few species. Wisdom in multitudes applies here.

The sudden arrestation of growth in the formation of the flower head, a new wave, and again an arrestation of growth, characteristic of so many *Compositæ*, are particularly marked in this species, and give it an additional interest.

In systematic botany, the plant has a great interest in connection with nomenclature. Whether any given set of plants should or should not be considered as forming a good species, is simply the opinion of an expert.—As "doctors disagree," it is said, in medicine, so do also experts in botany disagree here. The earlier botanists made numerous species which later ones regarded as in no essential degree different from *Chrysopsis villosa*. Gray therefore classes them together in his "Synoptical Flora," and then remarks, "Includes a multitude of forms, seemingly not distinguishable into species." Professor Edward L. Greene, an acute botanist from the Pacific coast, regards most of those rejected by Dr. Gray as good species, and has, in a monograph of the genus published in 1894, restored most of them to full specific rank.

The specimen illustrated is from a Colorado specimen, and is the typical form that would be regarded as *Chrysopsis villosa*, whether the other varieties or supposed species should be regarded as distinct or not.

EXPLANATION OF THE PLATE.—1. Upper portion of a flower stalk from a Colorado specimen. 2 and 3. Upper sections of the same stalk. 4. Leaf showing the vertical twist of the leaf. 5. Terminal flowers with arrested growth of stems. 6. Section of receptacle with a complete floret. 7. Akene and pappus.

WILD FLOWERS AND NATURE.

JUNE.

In June 'tis good to lie beneath a tree
While the blithe season comforts every sense,
Steeps all the brain in rest, and heals the heart,
Brimming it o'er with sweetness unawares,
Fragrant and silent as that rosy snow
Wherewith the pitying apple tree fills up
And tenderly lines some last year's robin's nest.
—JAMES RUSSELL LOWELL.

NOTES FROM MISSOURI.—ERRATA.

"Here they could quite easily elude even the *weary eye* of a disciple of Isaak Walton," etc. I quote from your January number, page 2. I was always under the impression that fishing was a very weary-eyed occupation. I know that I never went a fishing except when I was too weary to do anything else.

HERMAPHRODITES.

Regarding the new strawberry which the conductors have discovered and which they call "Hermaphrodite," it just shows that they do not believe in the degeneracy of the strawberry plants any more than I do, for I am originating new sorts in the land, and they are originating new sorts on paper. I used the old word *staminate* in my article. I do not desire to go sounding down the ages with an "Hermaphrodite" strawberry plant tacked on to me, for there is no such thing in existence.

PRECOCIOUS LEAVES.

I noticed just now a small cherry tree which is growing near an outhouse. The stem is about one foot from the house. Several of the branches rest against the planks. The tree is on the south side of the house. What attracted my attention was, those buds which rested against the planks were in full leaf, although small. All the rest of the buds on these branches, both above and below, were small and unopened. The warmth from the planks exerted an influence over those buds which rested on them.

MISSISSIPPI SPRING FLOWERS.

A walk to the shore of the Mississippi River, yesterday, gave me some early flowers: *Uvularia* (Bell-wort), a handsome flower of the lily family; *Lilium*, a brownish purple blossom; *Phlox*, like unto *procumbens*, fragrant, of lilac odor, of two colors; *Dicentra cucullaria*; *Dentaria*, resembling *laciniata* but without root-leaves; *Viola tricolor*, pansy, leaves three-parted, the divisions two, three, four, and five-cleft—deeply cleft, all root-leaves, roots fibrous; peduncles naked, two to four inches long. The blossom varies greatly in color. The two upper petals velvety-purple, the three lower of all colors, shades,—marbled, striped, blotched and plain. F. K. STEELE.

Festus, Mo.

And the fish that bite must be more "weary-eyed" than those that have less caution. The "printer," who is the one usually blamed for these "typographical" slips, in this case evidently "builded better than he knew." The youth of the present day, who are being taught to replace the angular style of letter writing by the vertical method, are to be envied by us of the older race. It is said that the test of good writing is that every one of the letters in a word should be formed so that if it stood by itself we should know what it was; this is more readily applied to the vertical system. Weary-eyed proof-readers are found more abundant among angularly written manuscript.

FLAT-TOPPED PINE TREES.—The tendency of many coniferous trees to become flat on the top with age is a marked peculiarity. The mammoth Sequoias of California are well-known illustrations of this character. In the Atlantic States, *Pinus pungens* is frequently so evenly and densely flat-topped, that when looked down on from some higher eminence, one feels he might walk on it as on a carpet. *Pinus inops* forms a similar flat-topped head. In the Old World, *Pinus Pinea* is similarly characterized. Their umbrella-headed appearance is the delight of painters of Italian scenery. The Table Mountain Pine is so peculiar that it might with propriety be called the "Table-headed" Pine.

EARLY BUTTERCUPS.—I note in your April number received to-day, and also in the January number, the reference to early buttercups. At this place, Portsmouth, Va., we have had rather a mild winter, and I picked *Ranunculus bulbosus* in blossom December 2d, 8th, and 22d. Since the middle of January, I have kept a small vase filled with the buttercups continuously. They are now very plentiful. A year ago the first *R. bulbosus* I found was April 3d.

A part of this earliness I attribute to the fact that the bulbs were very much crowded where the blossoms were found; but this was only partially so, as I found other places, on some of the dates, where the bulbs were not crowded and still had blossoms.

I note again this year that the *Lamium amplexicaule* has a very small corolla, barely showing in the calyx and which does not appear to open, beginning about November and continuing through the winter, the plants seeding vigorously. About the middle of March to the beginning of April, the open corollas, as described in Gray, begin to appear.

ELLIS B. NOYES.

Portsmouth, Va.

Some few years ago, a paper on Cleistogene plants—or those which have flowers maturing in the bud, which appeared in the proceedings of the Academy of Natural Sciences of Philadelphia, included *Lamium amplexicaule* in the list.

THE HOUSE FLY.—That we may know the least about what we commonly see, is well illustrated in the life-history of the House Fly. They are always with us, but we know very little of their comings in and goings out. The University of Minnesota has recently issued a paper on the subject,—not telling us all we would like to know, but still adding considerably to the little we have. It is not certain that it is a real native of America, or whether it came as a stow-away in some early vessel from the Old World. They were very active in Minnesota during the month of August. Between 6 P. M. and 8 A. M. next day, one fly had laid 120 eggs. This was on August 12th; on August 14th, the eggs were hatched, and minute fly maggots were crawling about. The eggs usually hatch in about 24 hours after being laid. The fly usually deposits its eggs in manure. The maggots moult twice. The larva is full grown in six days, when it becomes a pupa, and, in five or six days, emerges from its case a full-grown fly. Each female fly is capable of laying one thousand eggs in a season; a few of the stronger live through the winter as flies, and start the brood next season. Many die in the fall from a parasite fungus, and may be seen fast to the window glass.

VIBURNUM DENTATUM. — Among a lot of *Viburnum dentatum* planted last spring, I noticed a number with foliage quite pubescent on the upper surface. Almost all were somewhat pubescent. This species is described as smooth. During the summer I examined a large number of wild specimens in various parts of New Jersey and Pennsylvania, and found that nearly all of them were more or less downy up to the time of blooming, many becoming smooth later in the summer. Some specimens were quite rough-pubescent.

F. L. BASSETT.

Hammonton, N. J.

HEMIZONIA TENELLA.—One of the most insignificant of California's weeds is the *Hemizonia tenella*. Its flowers are little more showy than our common garden chickweed. But the plant itself is said to give out an odor quite as grateful as that emitted by our favorite Lemon Verbena.

ANTS AS THE GUESTS OF PLANTS.—All insects producing nectar may be regarded, as a whole, as ambulatory nectaries. They are more powerful causes of attraction to ants than the extrafloral nectaries. Scattering themselves nearly all over the surface of the plant, they determine the coming and going of the ants, which indirectly protect the whole plant. Yet the damage done by the "ambulatory nectaries," which extract the nutritive juices from the plants and cause deformities in their organs, can hardly be said to be compensated by the incidental and uncertain protection which the ants may afford them in other respects.

The ants which are really protective to plants are not those which obtain their food (indirectly for the most part through the aphides) from the vegetable kingdom, but those which are really carnivorous. These are numerous in temperate climates, and their usefulness to agriculture and sylviculture is incontestable. Thus the field ant is a great insect destroyer. A nest of this species is capable of destroying as many as twenty-eight caterpillars and grasshoppers a minute, or sixteen hundred an hour; and such a colony is at work day and night during the pleasant season. In the arid plains of America the beneficent work of ants is revealed in the isles of verdure around their hills.

There are plants hospitable to ants, which furnish them shelter and often food, within the cavities of which the instincts of the ants prompt them to take their abode. This is the case with several ferns, among them the *Polypodium nectariferum*, the sterile fronds of which bear nectaries on their lower face, and are, moreover, of a shape favorable to sheltering the insect.—PROF. M. HEIM, in *Appletons' Popular Science Monthly for April.*

HABITS OF CLEISTOGENE FLOWERS.—Most of our readers know that many plants have flowers which, with no petals, perfect their seeds in the closed calyx, and which are known to the learned as cleistogene flowers,—that is to say, flowers blooming secretly. The violet is an illustration of this. Many of the violets, and some other cleistogene plants, thrust their seed vessels into the ground as if determined to maintain their own immediate locality, as well as a positive in-and-in breeding. Plants with petals are supposed to have these generally colored ornaments because in-and-in-breeding is not healthful to them in the long run. Color is to attract insects, and thus get the advantage of a cross by foreign pollen, that would counteract the supposed in-an-in breeding injury.

But many plants have colored flowers that are so conditioned that they might as well be cleistogamous, for all the aid they receive from insects. Frequently they are comparatively inconspicuous, though beautifully colored under the microscope.

There is little doubt but the groundnut *Arachis hypogæa*, is a close fertilizer. Rarely does a flower fail to produce a "nut," and the visiting insects would have to be very numerous to go over every flower in a groundnut plantation,—and then they have the power of thrusting the fruit into the ground, as noted is a characteristic of many cleistogene plants.

It is more than likely that a close examination would show that the plant is practically cleistogamous. Our observing readers in groundnut regions might settle this question the coming season. Many have never seen and do not know how the groundnut behaves. A cut of its growth and singular habit is here reproduced from our excellent German contemporary, *Natur und Haus*, which clearly explains things. Fig. A. is a section of the nut about one-half size.

THE PEA-NUT.

FERTILIZATION OF LONG-TUBED FLOWERS.—In the March number of MEEHANS' MONTHLY, you have an article on the "Evening Primrose," and in perusing this, I was especially interested, in the various reasons which you there give, trying to account for the flowers opening in the evening. My particular object in writing to you, is not to demonstrate any new theory in this line, but to tell you of an incident which occurred here last year, and if worked out may lead to other thoughts.

Seed of *Œnothera taraxacifolia* were sown in the spring and flowered during the latter part of summer; this variety has a tube, five or six inches in length. One evening, around about seven o'clock, whilst admiring this most beautiful flower, there arrived upon the scene a very large night moth (almost as large as a humming bird), with a very long proboscis, and commenced operations in the way of gathering honey I presume. The next evening I was there about the same time, and there appeared seven more (all of the same species), and after a great deal of scheming (for they are wonderfully rapid in movements), I managed to catch one, and found on measuring that the proboscis was the same length as the tube of the flower. Unfortunately I did not preserve this specimen, but gave it freedom again. We hope, nevertheless, to have another delegation this year, if our "taraxacifolias" are not winter-killed.

To me this thing remains a mystery, and more so when other facts are added. I do not think the *Œ. taraxacifolia* has ever been grown any nearer to us than Short Hills, which is some 11 or 12 miles distant; and last year was its first season with us, the seed coming from England; I believe it is a native of Chili. [Yes, but properly it is *Œ. acaulis*.]

We have never seen this particular moth around here before, but have many other kinds, working the honeysuckles, etc.

I wonder by what knowledge of nature did these moths (who seem to be specially adapted to fertilize these particular flowers) find out there was *Œnothera taraxacifolia* in our district?

Is it another case like Prof. Darwin mentions, viz.: *Angrœcum sesquipedale* with its 10-inch nectary and a moth that fertilizes it, also with a proboscis corresponding to length of tube to the nectary?

Do you know if the Night-Blooming Cereus or the *Victoria Regia* are visited and fertilized by moths in their native homes?

I should esteem it a great favor to get some information on this subject through your valuable paper. CHAS. H. ATKINS.

Madison, N. J.

This thoughtful communication will be read with interest by intelligent readers. It may be well to remember, in the first instance, that the views of Darwin, Gray and others, in regard to the relation between insects and flowers, have been distorted and made to appear extravagant by sensational book makers. In a letter to the writer of this paragraph, Mr. Darwin, before his death, complained that much that was written seemed like a burlesque on his views. These great men, in the pardonable enthusiasm of new discoveries, made deductions, scarcely warranted at times, from a few isolated facts. Mr. Darwin, for instance, cut off the petals of a Lobelia, and found the bees did not visit them as they did those with the full blue flowers From this he taught that color was for the purpose of guiding bees to the flowers. But it has since been demonstrated that bees are not guided by color except perhaps in an incidental degree. The bees simply, from their experience, thought the Lobelia flowers Mr. Darwin mutilated were faded flowers.

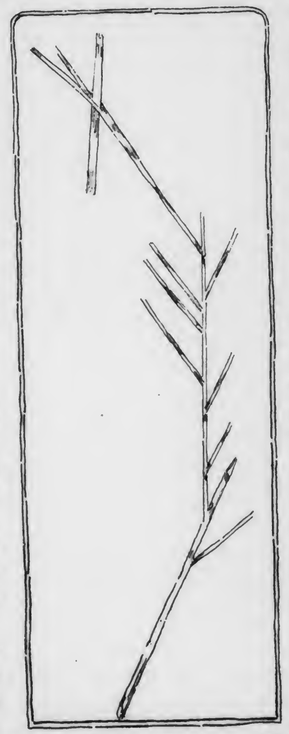
In like manner our great botanical teacher, Asa Gray, before his death, taught that most flowers were so arranged that in case of a failure to be cross-fertilized in their early stages of flowering, they could ultimately receive and profit by their own pollen. Thus the whole family of *Compositæ*, to which daisies, asters and dandelions belong, comprising the tenth part of the whole vegetable kingdom, are self-fertilizers. It therefore by no means follows that the visits of insects to flowers means the fertilization or cross-fertilization of these flowers. It might be noted what insects visited the Night-Blooming Cereus, or the Victoria, and yet the fact has little bearing on the fertilization question. In the first blooming of the Victoria Lily in this country, in the costly house built by Mr. Caleb Cope for the purpose, and where no insects of any kind had a home, the flowers seeded abundantly.

But as already noted, Dr. Gray taught that insects are only occasionally essential.

A NATURAL CURIOSITY IN VEGETABLE GROWTH.—In May 1896, in trimming our orchard (apple trees), I sawed off a limb but could not pull it down. It seemed to have grown into another and a larger limb. The union was so far out that I could not well get at it, so the limb, with all its branches, remained swinging in the air until this spring, 1897.

I sawed off the larger limb, into which the limb had grown, for examination.

It is evident that the limb originally lay in a crotch, and the yearly growths had so covered the limb that now it is exactly in the *center* of the big limb.



I enclose a rough cut of the whole thing. You will see that the limb where it enters the other is larger than the lower end of the same branch. The large limb (through which the other enters) is one inch in diameter. The length of the entire limb, in its three sections, is four feet and four inches.

The but of the limb is three-fourths of an inch in diameter. But the most *curious* part of this curiosity is yet to be told, and, from the stand-point of scientists I think it will be a *mystery*, yea! a *puzzle*.

The *entire* limb (4 feet and 4 inches long) with its seven branches were just as green as any part of the tree.

On the *end* of the limb, where it was sawed from the tree, could be seen the zone of *new* wood which was put on last season.

Had I caught the idea that this entire limb, with its branches, was alive and green, money would have hardly induced me to sever it.

It ought to have remained so as to see how long and how much it would have grown.

It must have been an interesting sight (from a scientific stand-point) to see a limb four feet long, and more, dangling in a hot summer air, with all its branches in full leaf.

Let botanists and vegetable physiologists explain *how* this limb and branches were fed.

Moscow, Vt. TIMOTHY WHEELER.

THE ORIENTAL PLANE. — Nurserymen are frequently asked to describe the difference between European Plane or Sycamore and the American Sycamore, or, as it is more popularly known in America, the Buttonwood. For ornamental purposes, the European Buttonwood, *Platanus orientalis*, is much preferable to the American. This is especially the case where a street tree is under consideration. The European species is of a much more spreading habit of growth than the American, and the taller and more irregular habit of the latter renders it less desirable for street planting. Another objection is that the American Sycamore is very liable to be attacked by a fungus which destroys the ends of the young shoots as soon as they push out in the spring. From the base of the branches so attacked, a number of small shoots appear, and this gives the tree a particularly scraggy and unsightly appearance. The European Sycamore is free from this particular fungus, but has another species which, later in the year, gives the leaves a mouldy or mildewy look. This, however, is not serious.

The European Sycamore is distinct from the American by other characteristics than those already mentioned,—chiefly by the leaves having a thicker and more leathery texture, and being more pointed at the lobes; and, when old enough to bear fruit, the seed balls being larger than those of the American species. These are difficult of distinction by the observer, but a little close attention will enable one to readily tell them apart.

CASSABANANA.—A correspondent writes that the given name of this cucurbit was *Secana odorifera*, to which a note was appended that there was no such genus. A correspondent observes that the writer no doubt intended *Sicana*. This would be correct as *Sicana odorifera* is the recognized name of a Peruvian plant, with which the member of this family is identified.

THE LONGEVITY OF SEEDS.—There has been so much difference of opinion in regard to the length of time that seeds will live in the earth without growing, when they happen to be excluded from atmospheric influences, that every truly-verified case is important. The London *Journal of Horticulture* tells of an undoubted case of a member of the cucumber family, which recently came up in an old patch of ground where the same species had not been grown within twenty years previously.

This was also experienced in the Meehan Nurseries during the past two years. A dwelling-house was erected on a piece of land which, some twelve years ago had been a portion of the ground devoted to botanical flowers. Some Box trees were set out on the filled-in land, to be left to grow for large specimens. Many of these had been dug up and removed during the last two years, making it necessary to dig at least two feet below the surface to get them up properly. In this process, many of these botanical plants, which had not been growing in the garden for the past twelve years, made their appearance last summer. One of these was *Antirrhinum Orontium*, of which there are certainly no plants, either cultivated or in forests, within Eastern Pennsylvania. This has also been noted in other cases on the same grounds. There is, therefore, no doubt that the popular idea of the longevity of seeds in some states in the earth is absolutely correct.

NURSERIES UNDER WATER.—The whole secret of oyster-culture is to furnish proper bodies for the attachment of the young. Many methods of doing this have been devised and employed. Although the development of this industry on a large scale is quite modern, seed-oysters for planting have been raised on a small scale in Italy for more than a thousand years by the following method: About the beginning of the Seventh Century a Roman knight, Sergius Orata, undertook the artificial breeding of oysters in Lake Lucrie. The enterprise was successful, and its author in a short time became very rich. The following method is still employed in that region, and we may presume that it is practically the same as that invented by Sergius: Upon the blackish mud are constructed here and there rockeries of rough stones, thrown into heaps sufficiently elevated to be protected from deposits of mud or slime. Upon these rocks oysters taken from the sea are deposited. Each rockery is surrounded by a circle of stakes. The stakes are united by a cord passing from one to another, to which are suspended between each two stakes a small bundle of twigs, floating in the water at a short distance from the bottom. When the fishing season arrives the stakes and bundles of fagots are taken up, those oysters are used which are suitable for market, and then the stakes are replaced. The discovery of a few very interesting ancient Roman pictures of the industry indicates that this method was used so long ago as the days of Augustus.—CALVIN DILL WILSON, in *April Lippincott's*.

INDIGENOUS PLANTS.—A correspondent asks how botanists distinguish between an indigenous and an introduced plant. They are guided simply by circumstances. For instance, one man finds a few plants of the heather of Europe in a few isolated spots in New England, where no botanist saw it before. It can be only one of two classes. It must have been previously over-looked, and is therefore a plant which has lost its power of distributing itself freely; or it is a casual introduction in some unknown way. If no proof sufficiently strong to warrant the introduction theory can be introduced, it would be conceded to be a native species dying out. But if it was found subsequently that it had not lost the power of spreading, but on the contrary was distributing itself easily and abundantly in every direction, the original judgment might be reversed and it would be regarded as a foreigner.

It is only by similar individual methods that the indigenous character or otherwise of any plant can be decided on.

NEPHRODIUM PATENS.—Dr. Franceschi says that Santa Barbara, California, is particularly rich in ferns, some of them being known only in that country, and one, *Nephrodium patens*, is to be found in a few canons near that town, and nowhere else in California, while it is widely distributed from southern Florida and Texas, all over tropical South America, and also in tropical Africa. Oregon and Washington are the paradise of Pacific coast ferns, —California ferns are less known.

GENERAL GARDENING.

"AND THE DESERT SHALL BLOOM LIKE THE ROSE."

A rose is sweet,
No matter where it grows; and roses grow
Nursed by the pure heavens and the strengthening earth,
Wherever men will let them. Every waste
And solitary place is glad for them,
Since the old prophet sang so until now.

—LUCY LARCOM.

CALIFORNIA PLANTS UNDER CULTURE.—It has been found difficult to get California perennial plants to take to culture in Eastern gardens, but it appears that they dislike gardening attentions, even in their own country. Dr. Franceschi, who has done much to introduce and tame wild plants from many parts, says of some which he has tried in Santa Barbara: "People have tried again and again to bring from the mountains the beautiful Madroño, *Arbutus Menziesii*, and the large-berried Manzanita *Arctostaphylos glauca*, and from our immediate neighborhood the ever-blooming yellow shrubby poppy, *Dendromecon rigidum;* the aromatic and pretty flowered Romero, *Trichostemma lanatum;* the Christmas berry or Tollon, *Heteromeles arbutifolia;* the different lilacs, as Ceanothus are commonly called, and others too; but without success; and in nearly every case, either because not taken up at the right season and in the proper way, or for lack of proper care after replanting. The few instances of success are showing well enough that there is no positive impossibility in the matter. It appears to be a natural provision for the perpetuation of species in regions exposed to long droughts, that seeds of most trees and shrubs be protected with hard flint-like shells, as everybody knows who has been trying with *Romneya*, *Dendromecon*, *Ceanothus*, *Fremontia*, etc., which take months and years to germinate. Moreover, the little seedlings are not at all easy to handle, no exception to the rule being the wild cherry or Islay, *Prunus ilicifolia*, and the Laurel *Umbellularia Californica*, which come up rather freely from seed. Notwithstanding all that, with proper knowledge, patience and perseverance, one is sure to succeed in this, like in other enterprises.

A POSSIBILITY IN FERTILIZERS.—*The National Stockman and Farmer* says:—

"In a recent article in the *Electrical Review*, the distinguished electrician, Tesla, points out the possibility of making available for fertilizer the vast stores of nitrogen in the air. His method is suggested in the following extract: 'With currents produced by perfected electrical oscillators, the production of the ozone is so abundant that it is sufficient to merely turn on the current for a few seconds and ozonize strongly the atmosphere of a large hall. These currents are also capable of bringing about chemical combinations, of which the chief is that of the nitrogen with the oxygen of the atmosphere, and an immense possibility, which I have been following up for a long time, is opened up; namely the combination of the nitrogen of the atmosphere on an industrial scale by practically no other means than mechanical power. If merely fertilizers of the soil would be manufactured in this manner, the benefits to humanity derived therefrom would be incalculable.'

As nitrogen is the most expensive fertilizing material, an abundant supply of it would indeed be of vast benefit to humanity. But the electrician's scheme is a possibility rather than a probability, and we must continue to get our nitrogen from the old sources—clover, the barnyard or the commercial fertilizer. Yet, in view of all the wonders which electrical science has brought forth, it is hard to say that this electrician's dream will not be realized some day."

LILIUM HARRISII.—It is calculated that some three million roots of the Bermuda Lily, *Lilium Harrisii*, were sent to the United States from the Island last year. Where could they have all been disposed of? Immense quantities of the cut-flowers are also shipped.

SHRUBBY MAGNOLIAS. — Few ornamental trees and shrubs are more appreciated than the various kinds of Magnolia. The Chinese forms are particularly desirable. A dwarf, low-growing kind is the Hall Magnolia, *M. stellata*. It is one of the early bloomers, with small leaves and pure white flowers. Another dwarf, shrubby kind is *M. obovata*, or, as it is often called in catalogues, *M. purpurea*. This has purple flowers, and blooms simultaneously with the expansion of the leaves. It will often bloom a second time towards autumn. It will sometimes make a bushy mass ten feet or more high. Another rather dwarf kind, though occasionally reaching the dimensions of a small tree, is the American *M. glauca*. Its delightfully fragrant creamy white blossoms are produced in early summer. Though making small trees eventually, the Yulan, *Magnolia Yulan*, or *M. conspicua* of some authors, blooms when quite young, as does its varieties known as *Magnolia Soulangeana*, which has reddish flowers, that contrast with the pure white of the Yulan. These bloom before the leaves, and are among the earlier harbingers of spring. *Magnolia fuscata* is a deliciously scented, purplish-white flowered species, and makes a pretty bush, but is doubtfully hardy north of the Potomac. *Magnolia Kobus* ought to belong to the bushy growing species. But in the Meehan Nurseries, one of the most beautifully formed of any tree is a specimen of this Magnolia; but it did not commence to flower for many years, possibly through being grafted on *Magnolia acuminata*.

SPRAYING.—One of the greatest advances ever made in successful gardening, was the discovery first announced in the old *Gardeners' Monthly*, that the poisonous Paris Green could be safely used in the destruction of the beetle so injuriously affecting the potato crop. A still greater advance was the discovery that copper solutions were effective in destroying injurious parasite funguses. Again, a great advance occurred when useful contrivances known as spraying machines were invented, and those who have spent time and money in introducing them to public notice deserve recognition. These machines are now considered as important in a collection of garden tools as a lawn mower or spade. The demand for them is evident from the vigor of advertisers. In our own advertising columns last month are notices from Morrill & Morley, of Benton Harbor, Michigan; The Deming Co., of Salem, Ohio, and the P. C. Lewis Manufacturing Co., of Catskill, N. Y.,—the last being the earliest to make their wares known through our columns. We are glad to be the medium through which these important advances are made.

BLEEDING AFTER SPRING PRUNING.—No one seems to have noted any serious results from the bleeding in trees after spring pruning. A friend suggests that the moisture oozing out was intended for the branches cut away, and in this sense may be regarded as surplus food, of no advantage to the portions left unpruned. In a certain sense this explanation may do. Certainly the roots of trees are very active in early spring time, gathering moisture for the coming draught on the tree which so many young leaves must necessarily make.

AGAVE TAYLORI, CENTURY PLANT.—This beautiful *Agave*, when in flower, is worthy of being placed in the front line among the best varieties in its class. The common name, "Century Plant," no doubt had its origin in the belief that it required a century of time in which to flower them. This may be true in many cases, as the flowers of Agaves *applanata*, *coccinea*, *fero*, *horrida*, etc., are said to be unknown. It is certain that some varieties flower in less time than others. One variety flowered here within seven years, five months and four days from the time of sowing the seed to the first flower being opened. All plants that have flowered here have died. If we compare a Century Plant with a Fuchsia, we find that the leaves of the former are packed very closely around the center, while the latter has its leaves from 1 inch to four inches apart. This gives the eyes of the Fuchsia a chance to break out and grow, while the *Agave* has scarcely a chance to do so. We find the eyes of the Century Plant to break out and grow after the lower leaves have decayed; then they have the same chance as the Fuchsia,—and they do grow! and if they had room enough, would probably flower while connected with the plant. The flower spike of this hybrid was in one solid column, from the base of roots to apex of spike. The base was rounded, increasing in size to 20½ inches in diameter, then abruptly growing smaller, and around this enlargement the leaves were attached. Total length of column was 14 feet 6 inches. This plant, during fifteen years, never produced an offshoot. The flowers of these plants are nearly always disappointing to those who see them for the first time, the flowers not being what they expected to see. Some go away disappointed, while others are quite satisfied. One gentleman said "This plant is worth coming fifty miles to see." It was imported from B. S. Williams, London, England, in 1878. The plant was probably four years old at that time. The flower spike was first seen June 22, 1893, when it was 7¾ inches high. Its average growth per day, until it reached 10 feet, was 4½ inches, after which it grew slower. It opened its first flowers July 17th, and the last, August 29, 1893.

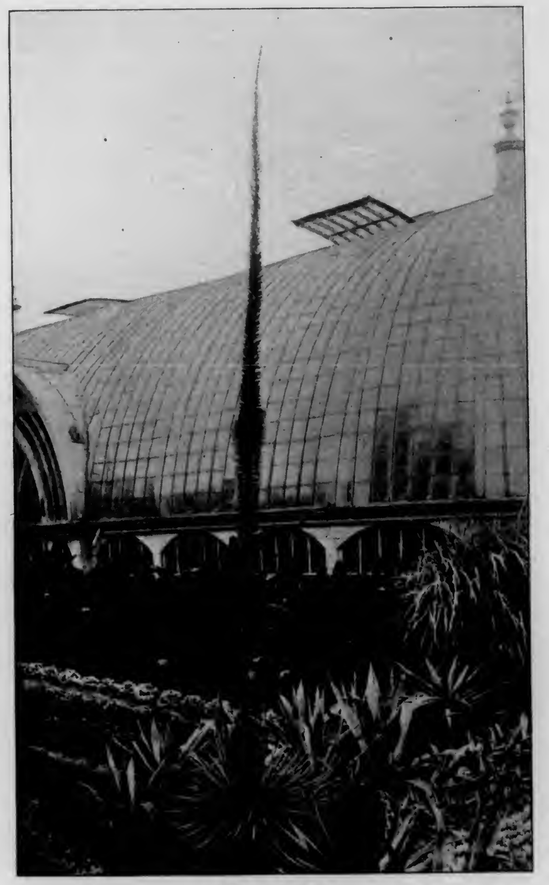
In a letter of inquiry, B. S. Williams says: "*Agave Taylori* is a cross between *A. densiflora* and *A. geminiflora*, and was raised by a Mr. Taylor, very near this nursery, and was named by us, as a compliment, for having such a successful cross. We think it is one of the handsomest Agaves grown."

Description: Height of plant, 2 feet; from that point to first flower, 1 foot 9 inches; from first flower to last, 10 feet 9 inches. Diameter of plant, 3 feet 3¼ inches. Number of perfect leaves on plant, 563. Number of flowers opened on spike, 2733. Leaves ½ to ⅝ inches wide, by 16 inches long; dark green, with a brownish tint towards the apex; convex on both sides, and having a narrow edge of grey, this splitting into wiry threads, the leaf terminating with a gray, rigid, pungent spine, 5-16 inches long. Bracts at the base of flowers, 5 inches long, gradually growing shorter to the apex of spike. The flowers are sessile, and are first in two's, then in threes, finally winding up in pairs. The buds, before opening, are olive-green and brown. Perianth (when open) and filaments, bright garnet. Stamens, golden yellow. The spike, when in bloom, is quite showy, the bright garnet flowers and yellow stamens having a very pleasing effect. Two hundred and fifty seedlings were raised, ⅞ being like the parent, thready; ⅛ perfectly smooth. One seedling has three leads.

Agaves propagate from seeds, offshoots, and from perfect little plants that grow on the flower stems of some varieties,—*A. Verschaffeltiana* being one. JOHN COULSON.

Worcester, Mass.

The illustration given, herewith, is from a photo. of one in flower in the grounds of Hon. Stephen Salisbury, whose gardener, Mr. John Coulson, in addition to a broad intelligence that does honor to his profession, is also an expert in the photographers' art.



AGAVE TAYLORI.

SHRUBBY MAGNOLIAS. — Few ornamental trees and shrubs are more appreciated than the various kinds of Magnolia. The Chinese forms are particularly desirable. A dwarf, low-growing kind is the Hall Magnolia, *M. stellata*. It is one of the early bloomers, with small leaves and pure white flowers. Another dwarf, shrubby kind is *M. obovata*, or, as it is often called in catalogues, *M. purpurea*. This has purple flowers, and blooms simultaneously with the expansion of the leaves. It will often bloom a second time towards autumn. It will sometimes make a bushy mass ten feet or more high. Another rather dwarf kind, though occasionally reaching the dimensions of a small tree, is the American *M. glauca*. Its delightfully fragrant creamy white blossoms are produced in early summer. Though making small trees eventually, the Yulan, *Magnolia Yulan*, or *M. conspicua* of some authors, blooms when quite young, as does its varieties known as *Magnolia Soulangeana*, which has reddish flowers, that contrast with the pure white of the Yulan. These bloom before the leaves, and are among the earlier harbingers of spring. *Magnolia fuscata* is a deliciously scented, purplish-white flowered species, and makes a pretty bush, but is doubtfully hardy north of the Potomac. *Magnolia Kobus* ought to belong to the bushy growing species. But in the Meehan Nurseries, one of the most beautifully formed of any tree is a specimen of this Magnolia; but it did not commence to flower for many years, possibly through being grafted on *Magnolia acuminata*.

SPRAYING.—One of the greatest advances ever made in successful gardening, was the discovery first announced in the old *Gardeners' Monthly*, that the poisonous Paris Green could be safely used in the destruction of the beetle so injuriously affecting the potato crop. A still greater advance was the discovery that copper solutions were effective in destroying injurious parasite funguses. Again, a great advance occurred when useful contrivances known as spraying machines were invented, and those who have spent time and money in introducing them to public notice deserve recognition. These machines are now considered as important in a collection of garden tools as a lawn mower or spade. The demand for them is evident from the vigor of advertisers. In our own advertising columns last month are notices from Morrill & Morley, of Benton Harbor, Michigan; The Deming Co., of Salem, Ohio, and the P. C. Lewis Manufacturing Co., of Catskill, N. Y.,—the last being the earliest to make their wares known through our columns We are glad to be the medium through which these important advances are made.

BLEEDING AFTER SPRING PRUNING.—No one seems to have noted any serious results from the bleeding in trees after spring pruning. A friend suggests that the moisture oozing out was intended for the branches cut away, and in this sense may be regarded as surplus food, of no advantage to the portions left unpruned. In a certain sense this explanation may do. Certainly the roots of trees are very active in early spring time, gathering moisture for the coming draught on the tree which so many young leaves must necessarily make.

AGAVE TAYLORI, CENTURY PLANT.—This beautiful *Agave*, when in flower, is worthy of being placed in the front line among the best varieties in its class. The common name, "Century Plant," no doubt had its origin in the belief that it required a century of time in which to flower them. This may be true in many cases, as the flowers of Agaves *applanata*, *coccinea*, *fero*, *horrida*, etc., are said to be unknown. It is certain that some varieties flower in less time than others. One variety flowered here within seven years, five months and four days from the time of sowing the seed to the first flower being opened. All plants that have flowered here have died. If we compare a Century Plant with a Fuchsia, we find that the leaves of the former are packed very closely around the center, while the latter has its leaves from 1 inch to four inches apart. This gives the eyes of the Fuchsia a chance to break out and grow, while the *Agave* has scarcely a chance to do so. We find the eyes of the Century Plant to break out and grow after the lower leaves have decayed, then they have the same chance as the Fuchsia,—and they do grow! and if they had room enough, would probably flower while connected with the plant. The flower spike of this hybrid was in one solid column, from the base of roots to apex of spike. The base was rounded, increasing in size to 20½ inches in diameter, then abruptly growing smaller, and around this enlargement the leaves were attached. Total length of column was 14 feet 6 inches. This plant, during fifteen years, never produced an offshoot. The flowers of these plants are nearly always disappointing to those who see them for the first time, the flowers not being what they expected to see. Some go away disappointed, while others are quite satisfied. One gentleman said "This plant is worth coming fifty miles to see." It was imported from B. S. Williams, London, England, in 1878. The plant was probably four years old at that time. The flower spike was first seen June 22, 1893, when it was 7¾ inches high. Its average growth per day, until it reached 10 feet, was 4½ inches, after which it grew slower. It opened its first flowers July 17th, and the last, August 29, 1893.

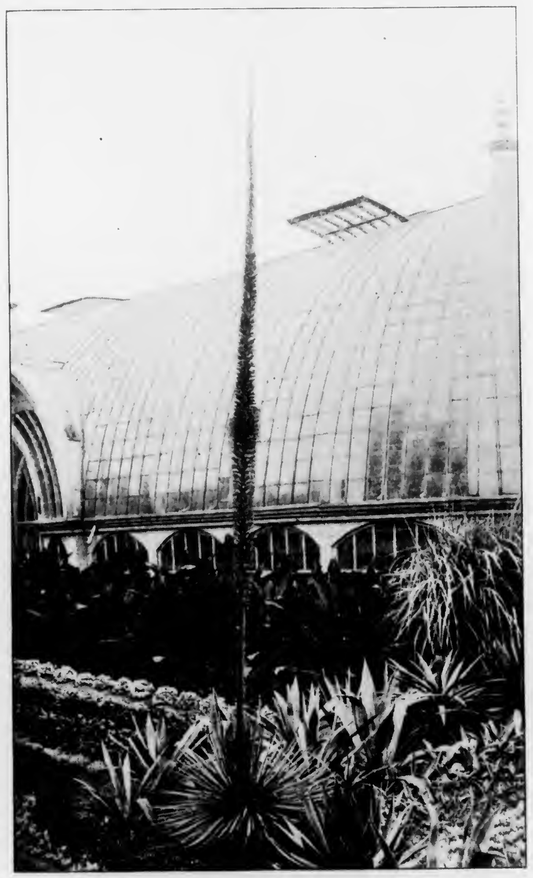
In a letter of inquiry, B. S. Williams says: "*Agave Taylori* is a cross between *A. densiflora* and *A. geminiflora*, and was raised by a Mr. Taylor, very near this nursery, and was named by us, as a compliment, for having such a successful cross. We think it is one of the handsomest Agaves grown."

Description: Height of plant, 2 feet; from that point to first flower, 1 foot 9 inches; from first flower to last, 10 feet 9 inches. Diameter of plant, 3 feet 3¼ inches. Number of perfect leaves on plant, 563. Number of flowers opened on spike, 2733. Leaves ½ to ⅝ inches wide, by 16 inches long; dark green, with a brownish tint towards the apex; convex on both sides, and having a narrow edge of grey, this splitting into wiry threads, the leaf terminating with a gray, rigid, pungent spine, 5-16 inches long. Bracts at the base of flowers, 5 inches long, gradually growing shorter to the apex of spike. The flowers are sessile, and are first in two's, then in threes, finally winding up in pairs. The buds, before opening, are olive-green and brown. Perianth (when open) and filaments, bright garnet. Stamens, golden yellow. The spike, when in bloom, is quite showy, the bright garnet flowers and yellow stamens having a very pleasing effect. Two hundred and fifty seedlings were raised, ⅞ being like the parent, thready; ⅛ perfectly smooth. One seedling has three leads.

Agaves propagate from seeds, offshoots, and from perfect little plants that grow on the flower stems of some varieties,—*A. Verschaffeltiana* being one. JOHN COULSON.

Worcester, Mass.

The illustration given, herewith, is from a photo. of one in flower in the grounds of Hon. Stephen Salisbury, whose gardener, Mr. John Coulson, in addition to a broad intelligence that does honor to his profession, is also an expert in the photographers' art.



AGAVE TAYLORI.

INTENTIONAL SECOND EXPOSURE

POLYANTHUS MACULATA, OR AGAVE MACULATA,—WHICH? My old friend, Phillip Miller, of the "Gardeners' Dictionary," published at London, in the year 1737, tells me that the *Polyanthus* is a primrose, and calls it *Primula veris*. He does not know a plant by the name of *Agave*. But he has much to say about aloes. He enumerates thirty-eight species, and says that it is a mistake of the common people that when the flower of the American aloe opens it makes a report as loud as a gun; and further says that it blooms under favorable circumstances in very much less time than fifty years instead of one hundred as so many think. Dr. Asa Gray, in his Manual, does not mention the word *Polyanthus*. There is a plant going the rounds now, and offered for sale by *Gardening*. It gives this description of *Polyanthus maculata:* leaves dark green, mottled with chocolate brown spots. Fine form, like a Century Plant. Bears the first year a spike crowded with curious orchid-like flowers as fragrant as "Tuberoses." With it is also a drawing of a very handsome plant which is copyrighted by A. Blanc. This description and drawing were sent to me as *Agave maculata*. Is *Polyanthus maculata* a spotted primrose? The above plant is entirely new to me. I enclose the paper to you, possibly you may identify it. There is nothing like it in this section. Am inclined to think it is a foreigner—may be African.

F. K. STEELE.

Festus, Jefferson Co., Mo.

There is no such thing as *Polyanthus maculata*,—but there is a *Polianthes maculata*. This brings it into the Tuberose family, and not the primrose, as a true *Polyanthus* should be. Possibly the drawing represents the correct plant though not the correct name. *Agave maculata* is another thing. That is a native of Texas and Southern Missouri. *Polianthes maculata*, the only brother of the Tuberose, is a native of Mexico.

SWEET-SCENTED PHLOX.—Reading recently, I note the question, "Who ever heard of a sweet-scented phlox?"

As a child, in my grandfather's garden, at Lynn, Mass., there grew phlox in a large bed; all the best varieties then known were mixed in it. One of these I always sought for its sweet scent.—if I remember rightly it was white with a red or pink streak in it. But since living in this region I have found a small wild, lavender-flowered phlox growing under beech trees, and flowering early. This has so delicious an odor that I have brought it home and planted it in partial shade in my garden, for the odor alone. It is not especially pretty. If the sun reaches it, it does not do as well, and the flowers bleach nearly white and lose most of their perfume.

The ignorance of the possibilities of cultivated wild flowers is wonderful to me. I have grown so many varieties that I have myself brought home from the woods,—and it is so easy, and such a pleasure in the spring, when they greet you before the more pampered blooms even think of waking. I have no patience with people like Edith Thomas, the poet (I believe it was) who told us that the Hepatica cannot be transplanted. Why will people "tell so many things they don't know." They might at least say they are not sure, or else let it alone altogether—the better plan.

Excuse these remarks. I seem to be almost as bad as the poet I criticise, for I am not sure it was Miss Thomas, or another, except that the poem was exquisite, as hers are wont to be.

SARA D. MUNRO.

Buffalo, N. Y.

LAWN AND GRAZING GRASSES.—Mr. James B. Olcott, who has done so much to turn public attention to intelligent grass culture, finds his laboratory too small to supply the seeds required by the demand. He is thinking of collecting the most desirable kinds himself in their native places of growth,—in this way securing the undoubted forms desirable for his experiments.

MEASURING THE HEIGHT OF TREES.—A correspondent properly suggests that in measuring the height of trees by the shadow, we must take the shadow on level, and not on sloping ground; and he also properly suggests, that when we speak of Prang being the father of American lithography, *Chromo*-lithography should be expressed.

CLEMATIS PANICULATA.—Among hardy vines of light growth, none are more desirable than *Clematis paniculata*, a plant that has been written about and photographed so often that its merits should be well known. But it is always shown in full flower. It is, of course, then at its best. Its second best is, however, so good that the delightful view given herewith seemed worth preserving.

The dreamy beauty of the plumey seed vessels fitted subtly into the Indian Summer weather, and was even more refined in quality than the drifts of starry white blossoms they replaced, though the flowers were the more striking, especially when fixed on the retina of the camera's eye.

The airy, gray-green wreaths of smoke hung in garlands over the finely-developed young climber made a particularly artistic picture against the light limestone of the gatekeeper's lodge, and, facing as it did to the north, the light was such as a painter would approve—the masses of dark green foliage supplying the necessary relief.

A plant that wears two distinct and attractive aspects in the course of each growing season cannot fail to become popular.

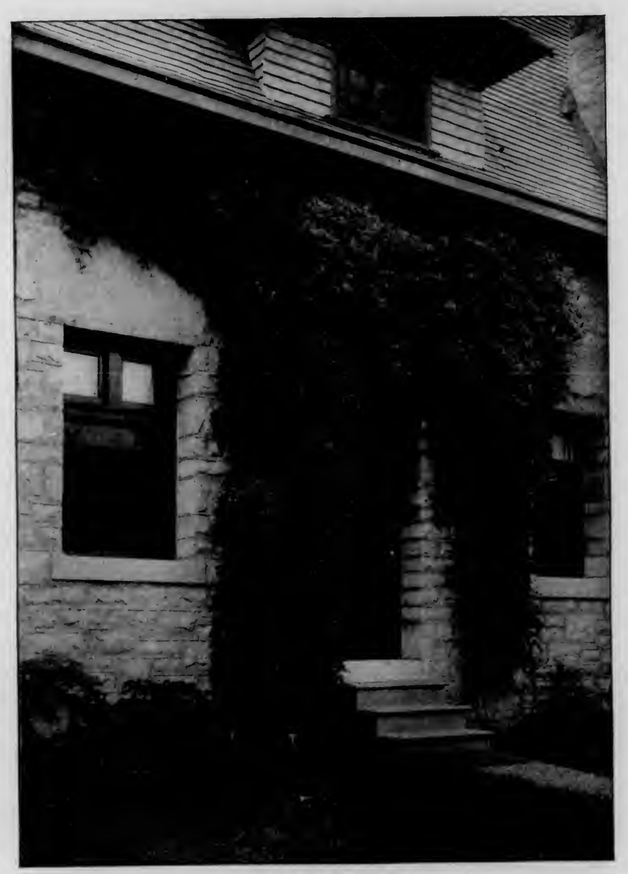
But the advantages of this Clematis are more than two-fold. It is unusually pleasing in foliage alone from early spring until freezing weather, and while its leaves are not coarse looking, they are firm in texture and have a quality that withstands both drouth and frost, neither seeming to detract from their good appearance.

Then, when the graceful panicles of buds are evolved in the lavish abundance which is its habit, the vine assumes a new and unexpected beauty that is indescribable, but so full of promise that it creates in flower enthusiasts an almost excited expectancy, which increases as the buds slowly expand to the point of showing creamy white tips, till, when the first clean-cut, star-like open flower hovers among the crowds of closely massed, delicately formed buds, it is as though one had found a gem—not in the rough, but exquisitely cut and perfectly set. And when the myriads of gracefully poised, pure white fragrant blossoms, each with its fairy aigrette of stamens, are set all along and about a well-grown vine, the resulting effect can be likened only to a broad web of Honiton lace caught airily across the length and breadth of the deep green background.

Notwithstanding the ethereal quality of its beauty, tastes, even the most *difficile*, will find solid satisfaction in the serial story of *Clematis paniculata*, for it can be depended upon to furnish finished material during at least seven months in the year, with well-timed episodes to whet the interest; and climaxes that will fulfill all anticipations.

FANNY COPLEY SEAVEY.

Brighton, Ill.



CLEMATIS PANICULATA.

POLYANTHUS MACULATA, OR AGAVE MACULATA,—WHICH? My old friend, Phillip Miller, of the "Gardeners' Dictionary," published at London, in the year 1737, tells me that the *Polyanthus* is a primrose, and calls it *Primula veris*. He does not know a plant by the name of *Agave*. But he has much to say about aloes. He enumerates thirty-eight species, and says that it is a mistake of the common people that when the flower of the American aloe opens it makes a report as loud as a gun; and further says that it blooms under favorable circumstances in very much less time than fifty years instead of one hundred as so many think. Dr. Asa Gray, in his Manual, does not mention the word *Polyanthus*. There is a plant going the rounds now, and offered for sale by *Gardening*. It gives this description of *Polyanthus maculata:* leaves dark green, mottled with chocolate brown spots. Fine form, like a Century Plant. Bears the first year a spike crowded with curious orchid-like flowers as fragrant as "Tuberoses." With it is also a drawing of a very handsome plant which is copyrighted by A. Blanc. This description and drawing were sent to me as *Agave maculata*. Is *Polyanthus maculata* a spotted primrose? The above plant is entirely new to me. I enclose the paper to you, possibly you may identify it. There is nothing like it in this section. Am inclined to think it is a foreigner—may be African.

F. K. STEELE.

Festus, Jefferson Co., Mo.

There is no such thing as *Polyanthus maculata*,—but there is a *Polianthes maculata*. This brings it into the Tuberose family, and not the primrose, as a true *Polyanthus* should be. Possibly the drawing represents the correct plant though not the correct name. *Agave maculata* is another thing. That is a native of Texas and Southern Missouri. *Polianthes maculata*, the only brother of the Tuberose, is a native of Mexico.

SWEET-SCENTED PHLOX.—Reading recently, I note the question, "Who ever heard of a sweet-scented phlox?"

As a child, in my grandfather's garden, at Lynn, Mass., there grew phlox in a large bed; all the best varieties then known were mixed in it. One of these I always sought for its sweet scent.—if I remember rightly it was white with a red or pink streak in it. But since living in this region I have found a small wild, lavender-flowered phlox growing under beech trees, and flowering early. This has so delicious an odor that I have brought it home and planted it in partial shade in my garden, for the odor alone. It is not especially pretty. If the sun reaches it, it does not do as well, and the flowers bleach nearly white and lose most of their perfume.

The ignorance of the possibilities of cultivated wild flowers is wonderful to me. I have grown so many varieties that I have myself brought home from the woods,—and it is so easy, and such a pleasure in the spring, when they greet you before the more pampered blooms even think of waking. I have no patience with people like Edith Thomas, the poet (I believe it was) who told us that the Hepatica cannot be transplanted. Why will people "tell so many things they don't know." They might at least say they are not sure, or else let it alone altogether—the better plan.

Excuse these remarks. I seem to be almost as bad as the poet I criticise, for I am not sure it was Miss Thomas, or another, except that the poem was exquisite, as hers are wont to be.

SARA D. MUNRO.

Buffalo, N. Y.

LAWN AND GRAZING GRASSES.—Mr. James B. Olcott, who has done so much to turn public attention to intelligent grass culture, finds his laboratory too small to supply the seeds required by the demand. He is thinking of collecting the most desirable kinds himself in their native places of growth,—in this way securing the undoubted forms desirable for his experiments.

MEASURING THE HEIGHT OF TREES.—A correspondent properly suggests that in measuring the height of trees by the shadow, we must take the shadow on level, and not on sloping ground; and he also properly suggests, that when we speak of Prang being the father of American lithography, *Chromo*-lithography should be expressed.

CLEMATIS PANICULATA.—Among hardy vines of light growth, none are more desirable than *Clematis paniculata*, a plant that has been written about and photographed so often that its merits should be well known. But it is always shown in full flower. It is, of course, then at its best. Its second best is, however, so good that the delightful view given herewith seemed worth preserving.

The dreamy beauty of the plumey seed vessels fitted subtly into the Indian Summer weather, and was even more refined in quality than the drifts of starry white blossoms they replaced, though the flowers were the more striking, especially when fixed on the retina of the camera's eye.

The airy, gray-green wreaths of smoke hung in garlands over the finely-developed young climber made a particularly artistic picture against the light limestone of the gatekeeper's lodge, and, facing as it did to the north, the light was such as a painter would approve—the masses of dark green foliage supplying the necessary relief.

A plant that wears two distinct and attractive aspects in the course of each growing season cannot fail to become popular.

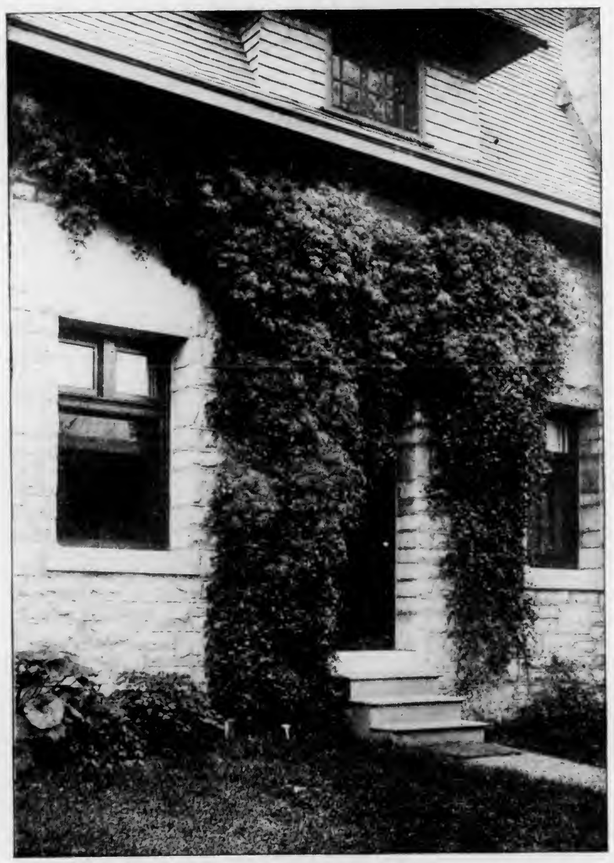
But the advantages of this Clematis are more than two-fold. It is unusually pleasing in foliage alone from early spring until freezing weather, and while its leaves are not coarse looking, they are firm in texture and have a quality that withstands both drouth and frost, neither seeming to detract from their good appearance.

Then, when the graceful panicles of buds are evolved in the lavish abundance which is its habit, the vine assumes a new and unexpected beauty that is indescribable, but so full of promise that it creates in flower enthusiasts an almost excited expectancy, which increases as the buds slowly expand to the point of showing creamy white tips, till, when the first clean-cut, star-like open flower hovers among the crowds of closely massed, delicately formed buds, it is as though one had found a gem—not in the rough, but exquisitely cut and perfectly set. And when the myriads of gracefully poised, pure white fragrant blossoms, each with its fairy aigrette of stamens, are set all along and about a well-grown vine, the resulting effect can be likened only to a broad web of Honiton lace caught airily across the length and breadth of the deep green background.

Notwithstanding the ethereal quality of its beauty, tastes, even the most *difficile*, will find solid satisfaction in the serial story of *Clematis paniculata*, for it can be depended upon to furnish finished material during at least seven months in the year, with well-timed episodes to whet the interest; and climaxes that will fulfill all anticipations.

FANNY COPLEY SEAVEY.

Brighton, Ill.



CLEMATIS PANICULATA.

INTENTIONAL SECOND EXPOSURE

NEW OR RARE PLANTS.

CARYOPTERIS MASTACANTHUS.—Perhaps no recently-introduced shrub has had more attention for the last two years than this. Though only brought to our attention a few years ago, it was first made known from China in 1844. It blooms here in September, lasting through October. The flowers are of a light azure blue. They last well when cut; and as a showy mass in a large vase, nothing can equal it. It is perfectly hardy here, having stood the last two winters without any protection.

SYMPLOCOS PANICULATA.—This is one of the late introductions from Northern Japan. The flowers are sweet-scented, white, in dense clusters along the stems; but the beauty of the shrub is in the berries, in early fall, of a most beautiful shade of ultra-marine blue. It is perfectly hardy.

XANTHORHIZA APIIFOLIA.—This is a pretty, native shrub which should be more used than it is. It has pretty, dark purple flowers about the middle of April; from its dwarf habit, it is unsurpassed for the edge of the shrubbery bed.

ITEA VIRGINICA.—Another native shrub of great merit; has pretty racemes of white, slightly fragrant flowers about the middle of June. In the autumn, the foliage turns to a rich crimson, having a striking effect when planted in masses.

BACCHARIS HALIMIFOLIA.—The Groundsel Tree is one of our best and most showy of native shrubs. As a seaside plant, it is doubtless unequalled. It will attain a height of ten to fifteen feet; but will bear pruning well, and may be kept a compact bush, although it will look best in a large clump. The flower heads, which appear about the beginning of October, are not large, but are very abundant. The fertile flowers, which, by the way, are borne on separate plants from the sterile, are by far the most showy; and, for several weeks, the plants are covered with a gray pappus almost as showy as the flowers. JOHN W. DUNCAN.

Gardener to Wm. H. S. Wood.

Greenwich, Conn.

THE WHITE MARECHAL NEIL ROSE.—Note has been made before, in MEEHANS' MONTHLY, that Mr. Franz Deegen, Jr., the well-known Austrian florist, had raised a white Marechal Neil Rose, it being a sport from the familiar yellow variety. In modern rose growing on an extensive scale, by florists, it has been found more profitable to replant with young stock every year; and, in consequence, varieties like the Marechal Neil, which do not produce flowers freely until the second year, are not favorites. But when one requires a rose to be planted for a permanency, as they are often required in large private conservatories, the Marechal Neil is still a prime favorite; and the new white one will be welcomed in these quarters.

CALLICARPA PURPUREA.—Many very beautiful shrubs achieve a wide popularity; and then, for some reason that no one appreciates, there seems to be a lack of inquiry for them. In this list, one may include the *Callicarpa purpurea*, which was introduced into this country from Japan some fifty years ago. It reaches a height, when fully grown, of about four feet, and the numerous, slender branches take a wand-like shape. In the early spring, a cluster of rose-pink flowers appear in the axil of each leaf. These flowers are succeeded in the fall of the year by bright, violet-colored fruit. This is probably the only plant that furnishes us with berries of this color, and always attracts at once, wherever grown.

ANTHURIUM VEITCHII RUBRA.—If one can imagine the common Calla Lily, *Richardia Æthiopica*—or more properly *R. Africana*, with its white spadix treble the size and of a waxy white color,—the spathe pressed perfectly flat, and of a bright red color, he can have an idea of this beautiful plant. A fine specimen is on our table from Mr. MacLellan, of Newport, Rhode Island. With it is a smaller flower, supposed to be a seedling blooming prematurely, which has two spathes and a double, partially-conjoined spadix, as the Calla Lily sometimes presents us with. It is of the Arum family, and from Colombia, South America.

THE HARDY FLOWER GARDEN.

PANSIES.—Pansies do not like shade nor do they like warm weather or hot suns. Rich earth, in an open but cool place is what they like. The improved kinds soon give way to unfavorable conditions. But a point not generally known is that they may be kept in tolerable perfection by an occasional cutting back. As soon as the flowers begin to show signs of degenerating, some of them should be pinched or cut back to near the ground. Vigorous shoots will then appear which will flower nearly as finely as the original crop. As these grow, those left before may be similarly treated. It is the effort to make seeds that induces the deterioration.

SEDUM SIEBOLDII.—The Japanese Stonecrop, *Sedum Sieboldii*, has few rivals in an ornamental flower garden. The round glaucous green leaves, on their purplish stems, will in themselves attract attention,—but when covered with their rosy heads of flowers they are specially attractive. It shows to best advantage when grown on some elevated position, as its branches love to trail. One of the finest specimens the writer ever saw was in the garden of a farm house in Eastern Pennsylvania. It was growing in a cheese box and this placed on a low garden wall. The branches on the exterior drooped so as to cover the sides of the box almost completely, while the interior branches retained an erect position through being supported by those on the outside. There were scores of these flower heads. Nothing could have been more beautiful.

TRIMMING ROSES.—When any plant in the flower garden begins to produce seeds freely, it usually inclines to stop flowering. Plants such as roses, which we desire to have flower as long as possible, should therefore not be permitted to fruit. All faded roses should be at once cut away. Even those which are known as everbloomers are benefitted by this practice. Indeed, the reason that these roses have this lengthened period of flowering is, that they show a natural indisposition to make growth. Roses flower only at the end of a young branch; when the faded flowers are cut away, the buds in the leaf-axils push into growth; and it is from this second starting of young branches that the flowers come.

LAMIUM PURPUREUM.—Some of the weeds of the Old World are beautiful enough to deserve culture in ornamental grounds. The Purple Dead Nettle, *Lamium purpureum*, is one of these. In the Meehans' Nurseries it has become a harmless weed. The masses of purple blossoms make a grand show before the snow has hardly thawed away. It is harmless because it does not like American suns. So after flowering, it dies back, and the cultivator destroys every vestige before the June roses blow. But when the cultivator stops in September, and the cool weather comes, the seeds sprout and make vigorous plants before frost comes, ready to flower at once when the winter goes away. Though a perennial it does well as an annual when sown early in the fall.

FRUITS AND VEGETABLES.

PREPARING PEARS FOR MARKET.—It is said that the finer class of pears are much more profitable when each fruit is wrapped separately in paper than when packed, as fruit is generally packed, in barrels. Just how this causes a better preservation of their flavor is not known, except on the general principle that pears ripened in the dark are always better in flavor than those exposed to the light; and the paper probably adds to the exclusion of the light.

THE PERSIMMON.—Possibly, as much use is not made of the persimmon as might be. In Japan, the persimmon is one of the most valuable of fruits. They are treated as figs, and preserved for use as marmalade, and used in many other ways. Our own persimmon might be rendered as valuable to us, if some thought were given to adapting ourselves to its requirements. A beer is sometimes made from the fruit; and it is said that experienced cooks know how to make first-class pies from them. Aside from this, very little use is made of the fruit of the persimmon in America.

THE MARGARET STRAWBERRY.—The Margaret Strawberry was tested by E. C. Davis, of Northampton, Mass., and is claimed to be a good amateur berry by reason of long continuance in bearing. It has continued to produce fruit for 38 successive days on the grounds of Mr. Davis. The berries are large, averaging over three inches in length. It was raised by John F. Beaver, of Ohio, and is being distributed by M. Crawford, of Cuyahoga Falls, in that State.

PROFITABLE GARDENING. — Persons often write to editors of magazines such as this, as to advice in regard to profitable market gardening. They tell about the quality of the soil, the aspect of the land, or the condition of the climate,—just as if profitable market gardening depended altogether on happy natural conditions. No one can give advice from these particulars alone. It is business qualification, rather than natural advantages, which should have the first thought in these matters. The proper markets for the products, and the facilities for reaching the markets, are of vital importance.

Take the raiser of apples, for instance. We would be asked, by such an inquirer as before mentioned, what varieties to plant. But this will depend altogether on the requirements of the markets where the apples will have to be disposed of. Some are more popular in one locality, while others again will be preferred in another; and this preference regulates prices. At this time,—that is to say, about the first of January, one can buy excellent apples in the Philadelphia markets for $1.50 per barrel. These will be of such kinds as Ben Davis and Baldwin; while those who have good Bellflowers or King of Tompkins County to offer, find ready buyers at $3.00 per barrel, and Spitzenburg will bring even a higher price. Possibly in other cities tastes will vary, and prices differ in consequence. It is such matters as these, as well as good natural conditions, that require thought on the part of those who are disposed to enter into market gardening.

PISTILLATE STRAWBERRIES.— The old saying, that one swallow does not make a summer, is as true when applied to theories of Horticultural or Botanical science as when reference is made to conditions of climate. Many years ago, a speculation, based on experiments at Cincinnati, was considered to show that pistillate strawberries were very much more productive than hermaphrodites. This happened to be true because the pistillate varieties with which the tests were made chanced to be particularly productive ones. Thus a general principle was elaborated,—that in any plant a division of labor was an advantage to the plant. It was thought that the plant which bore stamens only, and the plant which bore pistils only, could do that work more vigorously when a portion was carried on separately. This belief was subsequently proven to be wholly groundless when the Albany Seedling was introduced, which happened to be an hermaphrodite variety. No purely pistillate plant, even of the most vigorous character, was ever known to be as productive as the Albany Seedling. In many other instances, this speculation about the advantage of a division of labor in plants has been proven to be absolutely baseless. And yet, to this day, it is repeated over and over again in text books, as a known and true principle that ought to have attention from those engaged in Horticulture. It does seem that an error once started is almost impossible of eradication. Hermaphrodite is the technical name for flowers that contain stamens and pistils and not pistils only.

DESTRUCTION OF SCALE ON FRUIT TREE BRANCHES.—Referring to note on page 77, I may state that I have not tried linseed oil to destroy scale, but I have tried common lime wash, and tried it so successfully for the past forty years, that I have not tried anything else.

Not only for fruit trees, but for all sorts of trees; for instance, trees in cities frequently become somewhat stunted in growth and covered with the bark scale. When a case of this kind is encountered the trees are headed back during the fall, all small spray removed and the whole body and branches covered with lime wash, which effectually cleans them. Orange trees when attacked are treated in the same way, and with the same result.

A grapery becoming infested with mealy bug, had, after pruning, the entire wood, old and young, covered with the wash, and the bugs were exterminated. Last fall I came across an old Opuntia in an out of the way corner, which was entirely covered with scale. It was completely covered with the wash, and is now perfectly clean. The wash flakes off, and the scale insects with it, smothered to death.

The Euonymus, roses, peach trees,—in fact any plant with bark scale, are cleaned and cured in this way, so that a boy, with a bucket of white-wash, is our cure-all for scale.

WILLIAM SAUNDERS.

Washington, D. C.

PECULIAR TASTES OF THE WOOLY APHIS.— Insects frequently use a nice discrimination in regard to the plants they desire for food. One of the greatest troubles that afflict the grower of fruits on the Pacific coast is the Wooly Aphis, which attacks the roots of apple trees. Some of the prominent fruit growers in that section of the country assert that this insect will not attack the roots of the Northern Spy. It seems almost incredible that this should be the case. The Northern Spy is not grafted on its own roots, but on an ordinary seedling, which may be of any one or many varieties, totally different from the Northern Spy that is grafted on it. Unless we are to come to the supposition which has in past times been presented, that the character of a root of a tree becomes in time that of the graft placed on it, there would seem to be no ground for this explanation in the case of the Northern Spy. However, those who believe that the Northern Spy Apple trees are exempt from Wooly Aphis are challenging others to show a case in which the insects have appeared on the roots of these trees; whether seedlings from the Spy are aphis-proof is another question.

PEACH TREES FROM SEED.—It is claimed that peach trees raised from seed are healthier than budded trees, but this, of course, will depend on the character of the cultivator for carefulness. Where the propagator of the peach is careful not to take buds or grafts from diseased trees, the budded tree will, with proper care in this respect, be just as healthy as the seedling. Any seedlings which are raised in tainted ground show signs of disease as readily as trees grafted from diseased stock. The great difficulty with any orchard of seedling trees is that they do not come into bearing at the same time, and they vary in quality; so that those who depend on seedling orchards are never sure of the character of fruit that is to follow.

CHANGES IN THE CHARACTER OF FRUITS.— In America, the variation in the character of fruits, whether in form, color, or quality, is well-known. This is, to some extent, attributed to local conditions, but it does not fully account for many of our experiences. Changes not only occur in the same fruit grown in different States, or on trees grown in the same orchard, but frequently, as we have seen recently illustrated in our magazine, fruits on the same tree will vary in every conceivable character. In the Old World, however, they seem to attribute this change wholly to different climatic conditions. For instance, they say that the Gilly-flower, a well-known, peculiarly long-shaped apple, is much longer when grown in the South of England than when in the North; but they do not tell us what are the differences in climate to which these changes are referred. In a country which can be traversed in a few hours by rail-road, it does not seem that there ought to be any serious differences in climatic conditions.

MARKET GARDENING AT DENVER.—A correspondent tells us that forcing vegetables for market is one of the profitable industries in the City of Denver. Large prices are obtained for these articles when out of their regular season, and vegetable growing under glass is carried on to the most extensive scale. It is estimated that not less than 100 acres are under glass culture for vegetable growing.

DESTRUCTION OF THE CABBAGE-WORM.— Possibly one of the best methods of destroying Cabbage-worm is that recommended by *Gardening* several years ago. It was to take fine salt, dry it on a hot stove, and, when the dew was on the plants, sprinkle the dry, powdered salt over them. This should be done about once a week.

APPLES IN NEW ZEALAND.—New Zealand is found to be a remarkably favorable country for apple raising. So successfully is this fruit grown in that far off region of the world, that it can be sent to the chief European markets with profit, and it is said they promise to be powerful competitors with Canada and the United States.

AMERICAN PEACHES IN ITALY.—It is remarkable that the most popular varieties of peaches in the Old World are those of American origin. An Italian Horticultural Magazine on the Conductors' table gives high praise to the Amsden, Alexander, Wilder and Downing. These are especially praised for their earliness. In our country, the chief objection to the very early peaches is their small size.

BIOGRAPHY AND LITERATURE.

TO BE A BOY ONCE MORE.

The green trees whispered low and mild;
  It was a sound of joy!
They were my playmates when a child,
And rocked me in their arms so wild!
Still they looked at me and smiled,
  As if I were a boy.

And ever whispered, mild and low,
  "Come be a child once more!"
And waved their long arms to and fro,
And beckoned solemnly and slow;
O, I could not choose but go
  Into the woodlands hoar. —LONGFELLOW.

PARK COMMISSIONERS' CONVENTION.—Every department of labor and intelligence finds now great profit in occasional meetings and conventions, for the discussions on the interests of their several professions. Cemetery interests are now becoming of vital importance and have conferences notwithstanding that its interests are chiefly with the dead. A convention of Park Commissioners, Park Architects and Park Engineers dealing with the living of the United States was held in the City of Louisville on the 20th and 21st of May, which attracted a large gathering.

DAVID M. STONE.—There are few amateur gardeners in New York who are better known in this connection than the late David M. Stone, the Editor of the *Journal of Commerce*, whom death called during the past year. Like many other New Yorkers fond of gardening, his floral treasures were always open to the enjoyment of the public as well as to himself. It is said of him that, on a friend once remarking that it seemed extravagant to spend some three hundred dollars a year on bulbs alone, he replied, "I would think it extravagant if the money had been spent on all these flowers for my enjoyment alone; but when I note the thousands of persons who take pleasure in looking at them as they pass by, I consider it a cheaper exhibition for the people than even the most popular of Barnum's shows." This point in the character of Mr. Stone is largely shared by all genuine lovers of gardening. We never knew one but who was just as happy when others were enjoying the beauties of his garden as when he was delighting in it himself.

DR. ROBERT MILLIGAN HOGG.—The foreign journals continue to bring out testimonials to the severe loss horticulture suffers in the Old World, of Dr. R. M. Hogg, whose death on the 14th of March, at the age of 79, recently occurred. As Editor of the *Journal of Horticulture*, he did specially useful work. His "Fruit Manual" ranked in value with those of Downing or Barry, in our own country. His most useful sphere was as an editor; but one of the misfortunes of editorial life is that the "we" of this position obscures the personality of the great work the editor often does.

WILD FLOWERS OF NEW ENGLAND.—"New England Wild Flowers and Their Seasons," is the title of a neat little book of 150 pages by William Whitman Bailey, the Professor of Botany in Brown University. It is published by Preston & Rounds, of Providence, Rhode Island. Prof. W. W. Bailey is not only a well-known botanist of eminence, but is one thoroughly imbued with the spirit of nature. This work, like others he has written, is as pleasant to read as a popular novel, with the advantage of being many fold more profitable.

JOHN SAUL.—The many thousands who have admired the magnificent street trees of Washington will receive with deep regret the news of the death of Mr. John Saul, who with Messrs. William Saunders and William R. Smith formed the Parking Commission, under which the grand result has been attained. He occupied a prominent place in horticulture. Although in his 78th year, he was active up to the Saturday before his death, which occured on the following Tuesday, May 11th. He was born at Lismore, Ireland, on Christmas day, 1819, and settled in Washington in 1851. He leaves three sons and five daughters.

GEORGES BRUANT.—Possibly one of the most interesting additions to our flower garden ornaments is the result of the good work of a French amateur horticulturist, Georges Bruant, in the production of the Madame Georges Bruant Rose. It blooms profusely in the regular blooming time of the rose, and then makes a new start, and continues in profusion through summer and autumn. Besides its profusion of sweet white flowers, it has the stiff habit of an ornamental shrub, and can be made in this particular to produce admirable results in lawn planting. We all love to know something of the world's benefactors, and to give them due honor; and some account of the raiser of this beautiful hybrid will be welcome to our readers.

GEORGES BRUANT.

Georges Bruant was born in Poitiers, in 1842, and inherited a love for flowers from his father, who had considerable local eminence in this line. As an university student, he was led by one of the professors to favor microscopic studies, and anatomy, which drew his attention particulary to vegetable biology in which the fecundation of flowers holds such a prominent place. The love of experimenting in hybridizing became a passion with him. A number of new kinds among popular flowers are known as "Bruant races." The Rose Madame Georges Bruant, which has extended his reputation far beyond his country, is a hybrid between the popular *Rosa rugosa* and the Tea Rose Sombrieul.

Mr. Bruant is not an illustration of a prophet without honor in his own country, for in view of his great work in floriculture, the President of the Republic conferred on him the rank of Chevalier of the Legion of Honor; for the French, quick as they are to honor military heroes as we are, recognize the claims of benefactors of the human race in other lines besides ability in the art of war.

Mr. Bruant is a rare lover of the Chrysanthemum, and foremost among those who have a passion for grape culture. He is President of the North of France Chrysanthemum Society, and also of the National Viticultural Association. He has also been honored by membership in many prominent societies and institutions, not only in his own country but in foreign lands.

PHILIP WICKENS.—In almost all large commercial establishments there are intelligent, faithful workers on whom largely depend the reputation of the house. They are not organizers. They could not well carry on a business of their own,—but their value in the general make up of the concern is of no less importance. They deserve fame as well as those who employ them. In this list, Philip Wickens deserves a prominent place. He had charge of the fruit department of Ellwanger & Barry,—and his knowledge of fruit varieties was probably unequalled in America. He held the position with this firm for forty years. He was born at Rotherfield, Sussex, England, on August 25th, 1828, and died in Rochester, March 29th last.

FARFUGIUM GRANDE.—A correspondent of the *Mayflower*, writing from Missouri, says that this attractive window plant is known there by the name of Leopard-leaf, in allusion to its creamy spotted foliage. Botanists have found no great distinction between *Farfugium* and *Senecio*, and call it *Senecio Kæmpferi*.

GENERAL NOTES.

TELEGRAPH TREE PRUNING.—The "glorious uncertainty of the law" sometimes produces good results. A few years ago, an owner of side-walk trees in Chester County brought an action against a telegraph company for trimming his trees to make room for telegraph wires. The court decided that damages should be paid to the amount of the value of the material cut away, at cord-wood prices. Recently, a telegraph company cut away completely a number of trees which interfered with the wires, on the property of a gentleman at Douglasville, Pennsylvania. He brought suit, and the men who cut the trees were sentenced to pay a fine of fifty dollars each, or imprisonment for fifty days. This decision was appealed to the Supreme Court, on the ground that they were only liable for the actual cord-wood value of the trees. But the Supreme Court has confirmed the lower court's verdict. This is a case where the uncertainty of the law has been an advantage, in reversing an original absurdity.

THE MISSISSIPPI FLOODS.—There is much speculation in regard to the cause of the Mississippi floods which are more frequent and destructive as the years roll on. Landscape gardeners who have to do with ponds, lakes, and small streams, have learned that the earth brought down practically narrows the conduits and outlets. There is not the room for the same volume of water, as there originally was. The immense volume of earth carried to the mouth of the Mississippi annually, practically raises the high-water mark. Therefore unless some method of jettying by which the waste earth can be carried further from the mouth channel, or some new and additional outlet be formed, the danger must increase as the years roll on.

EUPHORBIA JUICE FOR THE CURE OF WARTS.—Some one, whom the journals call Professor Shuesof, is willing to stand in his naked feet and aver that the juice of the common garden Euphorbium will remove warts. This is not a popular delusion. The professor may resume his shoes, for nothing is better known than this fact. In the old "grandmother's gardens," there was generally a patch of *Euphorbia Cyparissias* or "milk-weed" grown especially for the purpose. In his boyhood, the hands of the writer were cleared of warts by the juice of a broken branch placed on them.

AMERICAN APPLES TO AUSTRALIA.—It has been stated that Australia was likely to become a formidable competitor with America in supplying British markets with apples. From all accounts, apple growing is considered one of the profitable Australian horticultural industries. Strange to say, American apples have found a prominent place in Australian markets; but we may be sure that, although Australians can raise good apples, it cannot be done so cheaply as in America. At any rate, the fact of American apples being sold there at all is an interesting one.

PUBLIC PLAY GROUNDS.—As cities grow, children are forced into alleys and by-ways for the small chance of recreation and health. Mrs. Seliger, in the *Hartford Times*, makes a strong appeal to the municipalities to look a little ahead and provide open spaces before they become costly acquisitions.

SAMUEL J. TREPESS.—For the past seven years gardener to Mrs. A. W. Blake, Brookline, Mass., Mr. Trepess resigned his position April 1st, to enter into business with his old friend, H. M. Sanders, florist, now established at Spokane, Wash.

FIGS FOR THE HOGS.—It is said that in some parts of California, where hog-raising is made a business, fig plantations have been made expressly that they may furnish food for the swine.

With so much abundance, why not make Syrup of Figs from them?

SITUATIONS WANTED.

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENERS:—We shall be glad to furnish names of competent gardeners adapted to large or small places. Gardeners wishing situations should correspond with us. THOMAS MEEHAN & SONS, Nurserymen, Germantown, Philadelphia.

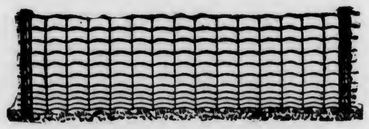
GARDENER with first-class references, has charge now at a gentleman's place of 25 acres-lawn, 6 acres vegetables gardens, 12 greenhouses, 28 years' experience in Europe and this country, wants to change his place. "A. Z." Office, MEEHANS' MONTHLY.

GARDENER.—Situation wanted by a young man thoroughly experienced in all branches. Married, no children. excellent references. Address E. G., Box 366, Mamaroneck, New York.

GARDENER—With thorough experience in landscaping as well as every branch of gardening desires situation. Scotch, married, no children. Fine references. D. M., care MEEHANS' MONTHLY.

GARDENER.—Gardener 47 years old, married, grown children, with life experience in every branch, wants situation. Finest reference. Address, T. H. G., care Thomas Meehan & Sons, Germantown, Pa.

FOR SALE.—Four greenhouses, each 11 x 50 with land 215 x 118; located in rapidly growing neighborhood, two miles from Camden ferry, on line of both steam cars and trolley. Address, Wm. Holt, West Park Ave., Vineland, N. J.



Confidence Restored.

Not Page confidence, that was never lost. Sales increased every year through the late "unprosperousness." Now comes 35 per-cent increase for the month of April. This shows that people like the **Coiled Spring** and like to **buy it of the owner**, rather than those who attempt to appropriate it without leave or license.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of **Rare and Beautiful California Novelties. Many New Begonias, New Cosmos, Rare Cacti, etc.** Offered by no others.

Ventura-by-the-Sea, Cal.

PUBLICATIONS
FROM THE
Gray Herbarium of Harvard University
forwarded postpaid on receipt of price.

SYNOPTICAL FLORA OF NORTH AMERICA
Polypetalæ.

FASCICLE I, Ranunculaceæ to Frankeniaceæ, $2.60.

FASCICLE II, Caryophyllaceæ, Ficoideæ, Portulacaceæ, Tamariscineæ, Elatinaceæ, Hypericaceæ, Ternstrœmiaceæ, Cheiranthodendreæ, Malvaceæ, Sterculiaceæ, Tiliaceæ, Linaceæ, Malpighiaceæ, Zygophyllaceæ, Geraniaceæ, Rutaceæ, Simarubaceæ, Burseraceæ, Anacardiaceæ, Meliaceæ, Aquifoliaceæ, Cyrillaceæ, Olacinaceæ, Celastraceæ, Rhamnaceæ, Vitaceæ, Sapindaceæ, and Polygalaceæ. Just issued. $2.60.

BOTANY OF CALIFORNIA
2 vols., 4to, bound in cloth, postpaid and registered $11.00, (delivered by express at purchaser's expense $10.00.)

ALLEN'S CHECK-LIST OF THE PLANTS IN THE 6th EDITION OF GRAY'S MANUAL OF THE NORTHERN U. S.
In paper, 10 cents each, 3 for 25 cents, 5 for 40 cents, 10 for 75 cents. In leatherette, 25 cents each, 3 for 60 cents, 6 for $1.00. Small and portable, convenient for field notes and herbarium exchange lists.

SUNDRY SCIENTIFIC PAPERS, REPRINTS, Etc., by Gray, Watson, Sullivant and others, can still be supplied. Prices on application.

Address orders to
B. L. ROBINSON, CURATOR
CAMBRIDGE, MASS.

"CACTUS GUIDE"
Published Monthly
Devoted to the culture of . . . **Cacti and Succulents**
Subscription price 50c. a year
SAMPLE COPY FREE
Cactus Guide, Sharon, Pa.

used on "World's Best" Spraying Outfits made only by THE DEMING CO., SALEM, OHIO.
Makers of PUMPS FOR ALL PURPOSES.
Ask your dealer for Deming Sprayers.
HENION & HUBBELL, General Western Agents, 61 to 69 No. Jefferson St., CHICAGO, ILL. Valuable illustrated 40 page book on Spraying, free. Our Spraying Outfits are used and recommended by leading horticulturists and experiment stations.

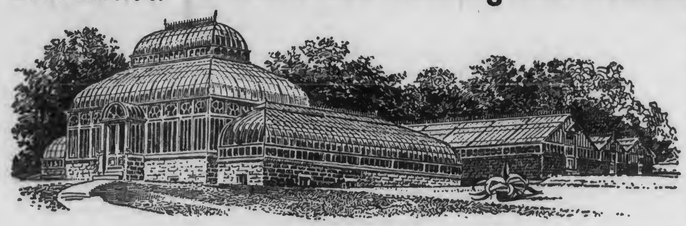
WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

VOL. X. NO. 463.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

JANUARY 5, 1897.

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

CONSIDER THE COST. Suppose the building is 60x32x20. It will require 16 pails, 14 gals. ready-mixed paint at $11.25 per gal.—$157.50.

Or, four 25-lb. kegs of white lead, $36.00; five gals. pure linseed oil, $2.00; four cans tinting colors, 80 cts.; ½ pt. Japan dryer, 15 cts.; ½ pt. turpentine, 5 cts. Total, $39.00—**a saving of $118.50 in favor of Pure White Lead** without considering its greater durability. Examine the brand (see list).

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information, and card showing samples of colors used, also cards showing pictures of various styles of different designs painted in various styles or combinations of shades forwarded upon application to those intending to paint.

National Lead Co., 1 Broadway, New York.

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for 25c.

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., Boston.

Fruits, Berries, Vegetables, &c. TWICE SIZE

A Wonderful Liquid Plant Food—develops the product of the fruit, or plant—makes fruit, vegetables, melons, berries, grapes, &c., grow to enormous size—flavor and color better, solid—good results guaranteed—five dollars in proportion. Pamphlet free. Formula for making and applying, sent sealed. Send 2-cent stamp for particulars. REFERENCES—Address

W. R. GARRETT, BOX 247, MOBILE, ALA.

FLOWER POTS

THE CHILDS POTTERY CO.

713, 715, 717, 719 Wharton Street, Philadelphia, Pa.

BRANCH WAREROOMS

Randolph Avenue and Union St., Jersey City.
Jackson Ave. and Pearson Av., Long Island City.

Park and Cemetery. An illustrated monthly for the advancement of Art out of doors. Practical articles of permanent value by competent authorities on subjects of special interest to **Commissioners, Trustees** and **Superintendents** of **Parks** and **Cemeteries**, and those interested in **Tree Planting** and **Town** and **Village Improvements**. Plans of Parks or Cemeteries, and their architectural and landscape features, illustrated every month. Subscription $1.00 a year. R. J. HAIGHT, Publisher, 334 Dearborn Street, Chicago.

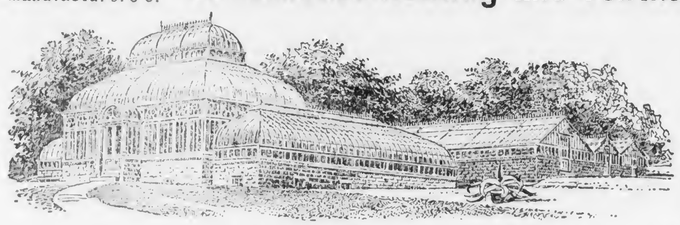
WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS. L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

ARMSTRONG & McKELVY Pittsburgh.
BEYMER-BAUMAN Pittsburgh.
DAVIS-CHAMBERS Pittsburgh.
FAHNESTOCK Pittsburgh.
ANCHOR, ECKSTEIN } Cincinnati.
ATLANTIC, BRADLEY, BROOKLYN, JEWETT, ULSTER, UNION } New York.
SOUTHERN, SHIPMAN } Chicago.
COLLIER, MISSOURI, RED SEAL, SOUTHERN } St. Louis.
JOHN T. LEWIS & BROS CO Philadelphia.
MORLEY Cleveland.
SALEM Salem, Mass.
CORNELL Buffalo.
KENTUCKY Louisville.

CONSIDER THE COST. Suppose the building is 60x25x20. It will require to paint it, 14 gals. ready-mixed paint at $1.25 per gal.—$17.50.

Or, four 25-lb. kegs of white lead, $6.00; five gals. pure linseed oil, $2.00; four cans tinting colors, 80 cts.; ½ pt. Japan dryer, 15 cts.; ½ pt. turpentine, 5 cts. Total, $9.00—**a saving of $8.50 in favor of Pure White Lead** without considering its greater durability. Examine the brand (see list).

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information and card showing samples of colors free; also cards showing pictures of twelve houses of different designs painted in various styles or combinations of shades forwarded upon application to those intending to paint.

National Lead Co., 1 Broadway, New York.

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for **25c.**

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., - - - Boston.

Fruits, Berries, Vegetables, &c. NEARLY **TWICE** USUAL **SIZE**

A Wonderful Liquid Plant Food—develops the product of the tree, vine or plant—makes fruits, vegetables, melons, berries, grapes, &c., grow to mammoth size—hastens maturity—has never failed—*good results guaranteed*—gives Flowers an intensely brilliant hue. Formula for making and applying, sent sealed. Send 2-cent stamp for particulars. REPUTABLE REFERENCES. Address

W. H. GARRETT, BOX 247, MOBILE, ALA.

FLOWER POTS

THE WHILLDIN POTTERY CO.,

713, 715, 717, 719 Wharton Street, Philadelphia, Pa.

BRANCH WAREHOUSES:

Randolph Avenue and Union St., Jersey City.
Jackson Ave. and Pearson St., Long Island City.

Park and Cemetery.

An illustrated monthly for the advancement of Art out of doors Practical articles of permanent value by competent authorities on subjects of special interest to **Commissioners, Trustees** and **Superintendents** of **Parks** and **Cemeteries,** and those interested in **Tree Planting** and **Town** and **Village Improvements.** Plans of Parks or Cemeteries, and their architectural and landscape features, illustrated every month. Subscription $1.00 a year. **R. J. HAIGHT, Publisher, 334 Dearborn Street, Chicago.**

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

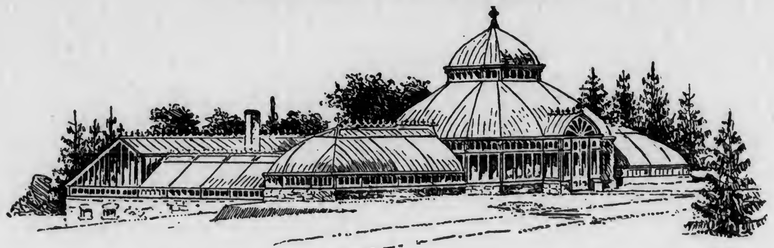
INTENTIONAL SECOND EXPOSURE

LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS

STEAM AND HOT WATER HEATING ENGINEERS

Plans and Estimates furnished on application



Largest Builders of Greenhouse Structures. **Six Highest Awards at the World's Fair**

Send four cents postage for illustrated catalogue

LORD & BURNHAM CO.

ARCHITECTURAL OFFICE, 160 FIFTH AVE., COR. 21st STREET, NEW YORK.

Factory: Irvington-on-Hudson, New York

Mention Paper

Beautiful Japanese Maples

We have a quantity of all of the finest sorts, in pots and tubs. These can be planted at any time during the summer. Extra sized 3 feet specimens in tubs. Prices on application.

THOMAS MEEHAN & SONS, Germantown, Philadelphia.

LANDSCAPE AND SANITARY ENGINEERING

Sub-division and treatment of property for towns, parks and villa sites. Designs for grading, road building, and other improvements. Public and domestic water supply. Sewage disposal for houses and towns. Reports, estimates, specifications and superintendence.

TOPOGRAPHICAL ENGINEERING AND SURVEYING — **HAROLD VAN DUZEE** — **PHILADELPHIA, PA.** 427 WALNUT ST.

EDWARD CAMPBELL

LANDSCAPE ARCHITECT AND ENGINEER

ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. **Fine Crushed Stone for Walks and Carriage Drives.**

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS. **The finest general assortment of Hardy Ornamental Plants in America.** Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.

THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

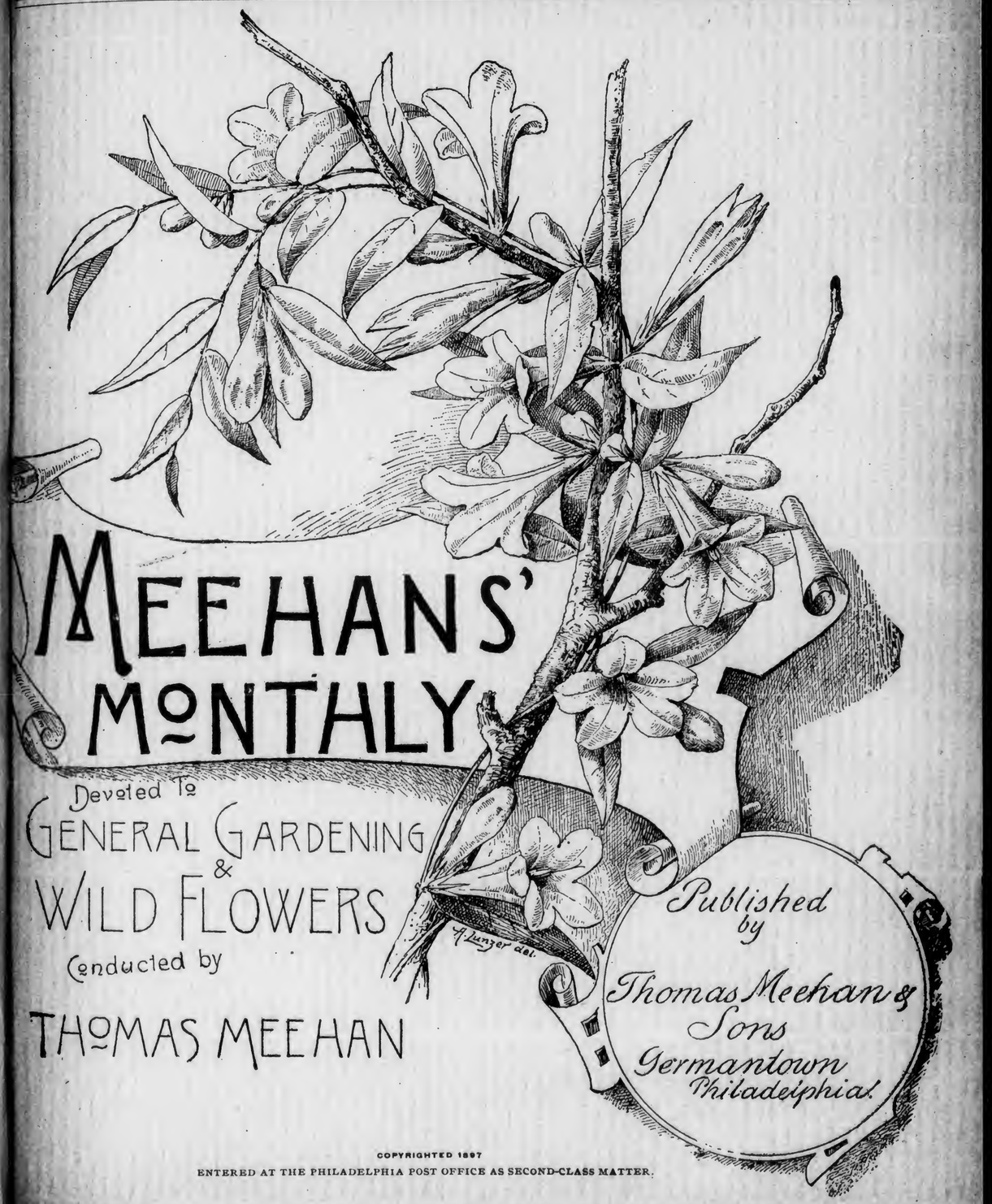
We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without putty. Latest methods of Ventilation, Steam and Hot-Water Heating. Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. ☞ Don't fail to get our Plans and Prices.

PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

WHEN WRITING TO ADVERTISERS, PLEASE MENTION MEEHANS' MONTHLY.

VOL. VII — JULY, 1897 — No. 7

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



MEEHANS' MONTHLY

Devoted To

GENERAL GARDENING & WILD FLOWERS

Conducted by

THOMAS MEEHAN

Published by Thomas Meehan & Sons Germantown Philadelphia

COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

Meehans' Monthly.

PUBLISHED MONTHLY BY

THOMAS MEEHAN & SONS,
Germantown, Phila.

Subscription Price $2.00 per year.

$1.00 for Six Months. Back Numbers 20 cts. Each.
Two Subscriptions for $3.50 per Year.

ADVERTISING RATES ON APPLICATION

Forms close on the 20th of each Month, preceding date of issue.

Address all Correspondence relating both to Editorial and Advertising matter, to

THOMAS MEEHAN & SONS, Publishers
Germantown, Phila., Pa.

A material has been discovered for glazing which after thorough test has been proven far superior to putty, it is called

MASTICA.

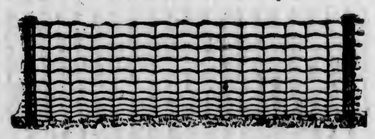
Mastica is easier to apply and when once put on it stays. It is not affected by extremes of weather, and is thus especially adapted for greenhouses, conservatories, graperies, hotbeds, etc. Endorsed by prominent florists throughout the country.
Send for descriptive circular of **Mastica and Mastica Glazing Machines.**

F. O. PIERCE CO.,
SOLE MANUFACTURERS
170 FULTON STREET, NEW YORK

GRIFFITH TURNER & CO., 205 N Paca St., Baltimore, Md.
EDWARD S. SCHMID. 712 12th St., N.W., Washington, D.C.
HENRY A. DREER. 714 Chestnut St., Phila., Pa.
HENRY F. MICHELL, 1018 Market St., Phila., Pa.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.
WM. WARNER HARPER, MANAGER



Irresponsible Agents.

They are always ready to guarantee you against all claims for infringement. Fence buyers should remember that other gentleman (?) who was ready to give a warrantee deed of the whole earth, and buy the Coiled Spring article, of the **absolute owners,** the

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

NOVELTIES IN PLANTS, FRUITS, ETC.
A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

Lotus of the Nile

Aquatic Gardening

Water lilies, Egyptian and Japan lotus, Victoria Regia. We carry a full line of **aquatics, Japan irises, Bamboos and hardy ornamental Reeds, Grasses and Perennials.** Plans and estimates furnished, and selections of varieties made upon request. See catalogue and separate water lily leaflet.

HENRY A. DREER, Philadelphia, Pa.

SPRAYER and SPRINKLER

SIMPLEST and BEST DEVICE.

For use at Country Seats, Large Estates, Manufactories. Also for Sprinkling Lawns, Private Grounds, Yards and Drives, Cemeteries, Carrying Water, etc.

STUDEBAKER "LITTLE GEM"

One Horse Farm, Garden, Flower-bed and Lawn **Sprinkler** (capacity 150 gal., 4 in. tires). Most practical device for the distribution of liquid manure, Paris Green or other liquid matter; for use of seedsmen, florists, nurserymen, farmers, celery and cotton growers. Can apply the stream directly on one or two rows at a time. **Will not clog. Easy to operate. Flow of water regulated from driver's seat.**

SPRAYER, PUMP, HOSE and NOZZLE

for **Spraying Fruit Trees, Vines** and **Shrubbery.** Does greatest amount of work at smallest cost. Least labor. Get our illustrated catalogue. Mention this paper.

Studebaker Bros. Mfg. Co.
SOUTH BEND, INDIANA
(The Largest Vehicle Works in the World.)
Branch: 564-566 Broadway, cor. Prince, N. Y. City

RHODODENDRON VASEYI.

RHODODENDRON VASEYI.

VASEY'S AZALEA.

NATURAL ORDER, ERICACEÆ.

RHODODENDRON VASEYI, Gray.—Low and bushy; branches smooth; leaves thin, ovate-oblong, acuminate, acute at the base; pedicels glandular, at length recurved; calyx short, truncate; corolla smooth, rose-color, rotate-campanulate, nearly equally five-parted, the lobes obovate; stamens and style slightly exserted; capsule oblong, smooth. Chapman's *Flora of the Southern United States*, 2d Edition. See also *Proceedings of the American Academy of Arts and Sciences*, vol. xv, p. 48, for Dr. Gray's original description.

The first impression with those who do not follow the literature of botany closely will be to dispute the accuracy of styling this picture a *Rhododendron*. They will insist that it is an *Azalea*. It is necessary to explain that Dr. Gray, who here describes this plant as a *Rhododendron*, would himself have considered it an *Azalea* a few years earlier. *Azalea* is kept distinct from *Rhododendron* in all his works previous to 1870; but in the *Synoptical Flora* issued in 1878, he follows other botanists who unite them, and unites this and another genus, *Rhodora*, all under *Rhododendron*. But he retains the term *Azalea* as a "sub-genus," giving the full description as if it had full generic value. It is not therefore that an *Azalea* cannot be distinguished from *Rhododendron* by a clear description in terms; but from a mere technical difference of opinion as to the artificial limit of our conception of a genus. When it is considered that for a century the word Azalea has been used as distinct from Rhododendron, and that the word has become part of general literature—a common name everywhere,—and when in addition it is remembered that it is easy to distinguish a group of Azaleas from a group of Rhododendrons by those of no deep botanical knowledge, it is to be regretted that no scientific research can discover a dividing line. Other genera of plants are permitted to remain as distinct with no more reason than in the present case. The Golden-rod, *Solidago*, can scarcely be separated from *Aster* by any clear scientific terms,—but the general aspects of the Golden Rod are relied on to guide the student, quite as much as the scientific description.

After all it is likely that some good points might be obtained by close observation of living plants. It has not been noted in botanical works that the outer coat of the pistil in *Azalea* and *Rhododendron* is in reality a tube enclosing five styles, the stigmas projecting just beyond the apex of this tube. This apex forms a rim just under the five stigmas, and is much more cup shaped in one genus than in the other, so far as the author has had the opportunity to examine. The character may not however be constant, for, in a case of a monstrous flower of a garden *Rhododendron*, the styles projected for nearly a quarter of an inch above the apex of the tube, with the exposed portions being quite distinct from each other, and indicating clearly the original pentagynous character of the style in this genus.

Returning to the species illustrated, it is one of a number of beautiful plants missed by the early explorers of the Mountains of North Carolina, and which have been brought to light only in modern times. It is remarkable that not only this but its more common relative, *Azalea arborescens*, was overlooked by the argus-eyed Andrè Michaux, the latter being first discovered by his son, Dr. F. A. Michaux, on his journey from Philadelphia in 1802, through the Alleghenies. He describes his first meeting with it at West Liberty, near Pittsburg, "on the banks of the creek on which P. Archibald's Mill is built, and on the sides of the torrent met within its environs, grows a species of *Azalea* which was at this time in flower. It grows to the height of twelve or fifteen feet. Its flowers, which are perfectly white, and larger than those of the other known species, diffuse the most agreeable odor. The *Azalea coccinea*, the flowers of which are a bright red, grows, on the contrary, on the summits of mountains, and flowers two months earlier." The latter, however, had caught the father's eye, and it is named *Azalea calendulacea* in his work.

Rhododendron Vaseyi was not discovered till 1878, when it was met with by an ardent young

COLOR PLATE

RHODODENDRON VASEYI.

VASEY'S AZALEA.

NATURAL ORDER, ERICACEÆ.

RHODODENDRON VASEYI, Gray.—Low and bushy; branches smooth; leaves thin, ovate-oblong, acuminate, acute at the base; pedicels glandular, at length recurved; calyx short, truncate; corolla smooth, rose-color, rotate-campanulate, nearly equally five-parted, the lobes obovate; stamens and style slightly exserted; capsule oblong, smooth. Chapman's *Flora of the Southern United States*, 2d Edition. See also *Proceedings of the American Academy of Arts and Sciences*, vol. xv, p. 48, for Dr. Gray's original description.

The first impression with those who do not follow the literature of botany closely will be to dispute the accuracy of styling this picture a *Rhododendron*. They will insist that it is an *Azalea*. It is necessary to explain that Dr. Gray, who here describes this plant as a *Rhododendron*, would himself have considered it an *Azalea* a few years earlier. *Azalea* is kept distinct from *Rhododendron* in all his works previous to 1870; but in the *Synoptical Flora* issued in 1878, he follows other botanists who unite them, and unites this and another genus, *Rhodora*, all under *Rhododendron*. But he retains the term *Azalea* as a "sub-genus," giving the full description as if it had full generic value. It is not therefore that an *Azalea* cannot be distinguished from *Rhododendron* by a clear description in terms; but from a mere technical difference of opinion as to the artificial limit of our conception of a genus. When it is considered that for a century the word Azalea has been used as distinct from Rhododendron, and that the word has become part of general literature—a common name everywhere,—and when in addition it is remembered that it is easy to distinguish a group of Azaleas from a group of Rhododendrons by those of no deep botanical knowledge, it is to be regretted that no scientific research can discover a dividing line. Other genera of plants are permitted to remain as distinct with no more reason than in the present case. The Golden-rod, *Solidago*, can scarcely be separated from *Aster* by any clear scientific terms,—but the general aspects of the Golden Rod are relied on to guide the student, quite as much as the scientific description.

After all it is likely that some good points might be obtained by close observation of living plants. It has not been noted in botanical works that the outer coat of the pistil in *Azalea* and *Rhododendron* is in reality a tube enclosing five styles, the stigmas projecting just beyond the apex of this tube. This apex forms a rim just under the five stigmas, and is much more cup shaped in one genus than in the other, so far as the author has had the opportunity to examine. The character may not however be constant, for, in a case of a monstrous flower of a garden *Rhododendron*, the styles projected for nearly a quarter of an inch above the apex of the tube, with the exposed portions being quite distinct from each other, and indicating clearly the original pentagynous character of the style in this genus.

Returning to the species illustrated, it is one of a number of beautiful plants missed by the early explorers of the Mountains of North Carolina, and which have been brought to light only in modern times. It is remarkable that not only this but its more common relative, *Azalea arborescens*, was overlooked by the argus-eyed Andrè Michaux, the latter being first discovered by his son, Dr. F. A. Michaux, on his journey from Philadelphia in 1802, through the Alleghenies. He describes his first meeting with it at West Liberty, near Pittsburg, "on the banks of the creek on which P. Archibald's Mill is built, and on the sides of the torrent met within its environs, grows a species of *Azalea* which was at this time in flower. It grows to the height of twelve or fifteen feet. Its flowers, which are perfectly white, and larger than those of the other known species, diffuse the most agreeable odor. The *Azalea coccinea*, the flowers of which are a bright red, grows, on the contrary, on the summits of mountains, and flowers two months earlier." The latter, however, had caught the father's eye, and it is named *Azalea calendulacea* in his work.

Rhododendron Vaseyi was not discovered till 1878, when it was met with by an ardent young

COLOR PLATE
INTENTIONAL SECOND

botanist, Mr. G. R. Vasey, son of the late eminent Botanist to the United States Department of Agriculture, Dr. George Vasey, near Webster, in Jackson County, North Carolina. It was subsequently discovered by Mr. S. T. Kelsey and Mr. J. Donald Smith quite abundantly near Chimney Top Mountain in the same county. Mr. S. T. Kelsey also reports it as abundant in the Grandfather Mountain. *Garden and Forest* records it as growing in great luxuriance with *A. arborescens* on the banks of a small stream in Cashiers Valley, South Carolina, in the rear of the summer residence of the Hampton family. Mr. Harlan P. Kelsey, son of Mr. S. T. Kelsey cited above, residing at Kawana, North Carolina, says that "it grows mostly in deep ravines, up steep hill sides, particularly on northern exposures, to an elevation of almost 6,000 feet near the summit of Grandfather Mountain, and down to about 2,500 feet. It grows in company with *Vaccinium Erythrocarpum*, *Aconitum reclinatum*, *Geum radiatum*, *Saxifraga leucanthemifolia*, *Clintonia borealis*, *Leiophyllum buxifolium prostratum* and others,—many of them quite rare." *Garden and Forest* says in reference to some of these named localities "growing everywhere in clumps and patches on the Southern and Northeastern slopes at 4,500 to 5,000 feet elevation,—but most abundant in moist situations and in association with *Rhododendron maximum*, *R. Catawbiense*, *and Kalmia latifolia*.

Mr. Vasey, the discoverer of this beautiful Azalea, is now residing in the State of Washington.

The specimen illustrated is from a plant kindly furnished by Mr. Harlan P. Kelsey,—the flowers rather smaller for the transplanting, than when in a natural condition. It flowers before the leaves. The branch with immature leaves, in the picture, was added two months after the flowers were taken. The leaves are somewhat narrower than they are sometimes found, and the flowers *Garden and Forest* says, are sometimes two-lipped. The flowers are said by one collector to be delightfully sweet-scented. It may be noted that the *Azalea nudiflora* often has the whole head of flowers turned into an acidulous gall-like mass, produced by a species of fungus. Another species produces a similar result on *Azalea Vaseyi*. The "apple" in this case is rather small, and when mature presents the appearance of having had numerous black pins thrust nearly their whole length into the globular mass.

The species is characterized by long and slender styles, and the cup-like fringe around the stigmas already referred to is particularly prominent.

A number of plants found in the Mountains of North Carolina are identical with species found in Japan. Prof. Sargent notices that this is a similar case, as it is very closely related to one figured in Maximowicz's Rhododendrons of Eastern Asia as *Rhododendron Albrechti*.

The fact of so many of the plants of Japan and Northern Asia being identical or similar to the native plants of the eastern portion of United States has been a stumbling block to that section of evolutionists who find so much in other directions to support the views that species are developed from other species by the operation of what is termed environment. It is first assumed that the number of species was comparatively small and confined to a limited portion of the earth's surface. In time the species become widely distributed. With the varying conditions of soil and climate acting on the vegetable organization, come changes in the character of the plant. This is called environment, and thus the changes accounted for. It is in a great measure the view of Darwin, Spencer, and other great men. With the changes brought about by the environment, some of the newer characters enable the plant to battle more successfully in the great struggle for life which existence is supposed to be. Those which assume the greater number of favorable weapons in this great struggle are the most successful. This is the doctrine of natural selection. Those which are the fittest for the new conditions survive,—those with the fewest adaptations to the changed circumstances die out, or are crowded out by the rest. That there are many facts in support of this hypothesis in regard to the appearance of new species is undoubted. The great minds that have adopted it could not be led there by shallow appearances. But such facts as those here presented in connection with *Rhododendron Vaseyi* and other plants seem utterly opposed to it.

EXPLANATION OF THE PLATE.—1. Early flowering branches. 2. Summer branch with immature fruit.

WILD FLOWERS AND NATURE.

THE SYLVAN SANCTUARY.

When heat oppressive makes the field plants droop,
And like a fevered pulse the throbbing air
Exhausts the languid landscape; from the glare
Of sky, grown painful, from the noisy troop
Of rasp-toned locusts with their aimless swoop;
What blest relief in woods secluded, where
A gentle coolness laves the forehead bare
And limpid streamlet tempteth us to stoop!
Here dwell the greenest, tend'rest herbs of all;
Spring's palest leafy vapor is outdone
By yonder mosses' tint, against whose light
In sombre silhouette the fern sprays fall;
Not richer Autumn's robes than here are spun
To clothe the mold'ring tree trunk from our sight.

—FREDERICK LEROY SARGENT in *Outing*.

BERRY-BEARING HOLLY.—A very remarkable fact, but which has not attracted the attention of botanists, is that of the great difference between the sexual character of European and American trees. European species are usually hermaphrodite, or, if bearing flowers of separate sexes, these are of widely distinct character. The oak, for instance, has a very different flower for the production of the acorn from those which produce pollen only,—and so with walnuts and some other trees; but the class which in former times would be called polygamous is a strong characteristic of American over the English or other European species. The holly furnishes an illustration. Out of one hundred seedlings taken at random, there may be perhaps ten per cent., that would be perfectly hermaphrodite,—that is to say, an isolated plant would bear an abundance of berries and bear them regularly every year; others would have distinctively female flowers or distinctively male flowers, and consequently be wholly barren unless growing in the neighborhood of each other. And what is true of the holly is true of other berry-bearing plants. This is a necessary explanation from the fact that it is a frequent occurence to have a customer of a nurseryman writing to say that such and such a plant that he bought wholly for its berries has proven unproductive. The only way to be certain of a berry-bearing plant in this case is to have those that have been propagated from berry-bearing plants by grafting.

A CHARITABLE TREE.—Two small beech trees, six inches in diameter, grew side by side 12 inches apart in Stockbridge, Mass., in 1841.

Eight feet from the ground was a cross limb, or lateral branch, which grew *through* the other. One tree was severed from its stump yet the severed tree, though hanging in the air, still continued to live and grow, not only *above* the supporting limb, but *between the limb and the severance below*.

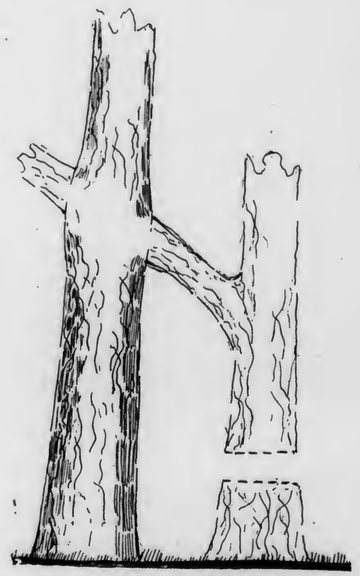
How life should *continue* in the *lower* portion for successive years, is the mystery.

This tree was seen by E. W. Canning in the third or fourth season after its severance and still it was alive, but it did not grow like the other.

The *substance* (I quote from memory) of the above I took from *Popular Science Monthly*, September, 1887, P. 700.

TIMOTHY WHEELER.

Moscow, Vt.



A CHARITABLE TREE.

A NEW ENGLAND ELM.—North America, at least Eastern North America, cannot boast of very large trees, so far as girth is concerned. The Old World beats us in this respect. But they grow more lofty and attain a greater girth in a shorter time. An average White Elm under average conditions will make a fair log of timber in thirty or forty years, which it would probably puzzle any of the hardwood trees of the Old World to do. Most of our trees have their rise, progress, and decay, all within a hundred years,—and a tree two hundred years old is a great rarity.

Once in a while an individual may be brought forward to contest the palm with its European allies. There are some notable specimens of the English Elm in our country, but there are some equally famous individuals of its closely related American species. One of these has found a place in the "Notable trees of New England," and of this we have a photograph through the courtesy of Mr. E. O. Orpet, of South Lancaster, Mass. It is known as the Lancaster Elm. Mr. Orpet gives the girth at six feet from the ground as 24 feet at the present time.

BOTANIZING IN NEW JERSEY.—On June 23d, it was my privilege to be on the Long Island plains. I left the train at a station about twenty-five miles from Brooklyn, and spent half an hour in suppressing exclamations. About the broad treeless level were patches of dull green Goat's-rue, the stiff stalks each terminating in a head of red and creamy bloom, with individuals like sweet peas. Here and there rose a slender leafless spike of marvellous grace from a rosula of spatulate root-leaves pressed close against the earth, the white lily-like flowers of the stalk all mealy looking,—*Aletris farinosa*.

Large areas of Killcalf were pink and white with large waxy bells, and flat on the ground spread a carpet of purple *Polygala polygama*. One of these which I dug up had a runner under the surface bearing a series of pallid cleistogamous flowers as large or larger than the aërial ones.

All these I saw in bloom for the first time; but familiar John's-wort and yellow clover verified the strangeness of the scene. Scarcely a daisy or any rank weed grows on those parts of the plains even moderately remote from dwellings; but all the plants are strictly selected to suit the soil, are mostly low and seem to live in perfect harmony or pleasing contrast, as to color, with their surroundings as though they had grown to know and understand the plains and their sister herbs through long ages of life.

Late July will find the linear-leaved aster blooming in great patches, Nuttall's *Polygala*, Lespedezas, the small and delicate *Asclepias verticillata*, various sunflowers, Blue Curls, *Eupatorium hyssopifolium*, a procumbent *Stachys* and *Rhus copallina* in bloom by every fence. Cloves, Sweet Pepper Bush, Meadow-beauty, *Apios* and golden-rods in every moist depression. I once found a solitary yellow fringed orchis flourishing in the dryest of spots on all the plains.

I said to a friend, after my stroll, "It is strange the Plains-folk ever have flower gardens when there is so little need." Yet they do. E. NEWLIN WILLIAMS.

THE FLOW OF SUGAR MAPLE SAP.—Investigations upon the flow of sap have been made during the last few years by Messrs. Wood, Morse & Stone, at the New Hampshire State Agricultural College (Durham), one of their aims being to determine the flow of sap from different depths of the wood. After a long series of careful observations, taking into account the time of flow, the quantity of sap and the percentage of saccharose from different depths, they have summed up the results of their experiments in the following statements (Bulletin 32): "The results obtained in these studies upon the flow of sap tend to show that more sap flows from a deep hole than from a shallow one. The exact depth to which a hole should be bored is unsettled, and may prove to depend on the size of the tree."

A LARGE HONEY LOCUST TREE.—Mr. Benjamin Heritage, of Mickleton, N. J., sends us an account of a remarkably large Honey Locust tree growing at Mullica Hill, N. J. This tree is eight feet, four inches in circumference, two feet from the ground; and seven feet, two inches, at four feet from the ground. It would be interesting to know whether there are any larger specimens of this tree. It varies much in its spines. Some trees are almost free from thorns.

A NEW ENGLAND ELM.

A NEW ENGLAND ELM.—North America, at least Eastern North America, cannot boast of very large trees, so far as girth is concerned. The Old World beats us in this respect. But they grow more lofty and attain a greater girth in a shorter time. An average White Elm under average conditions will make a fair log of timber in thirty or forty years, which it would probably puzzle any of the hardwood trees of the Old World to do. Most of our trees have their rise, progress, and decay, all within a hundred years,—and a tree two hundred years old is a great rarity.

Once in a while an individual may be brought forward to contest the palm with its European allies. There are some notable specimens of the English Elm in our country, but there are some equally famous individuals of its closely related American species. One of these has found a place in the "Notable trees of New England," and of this we have a photograph through the courtesy of Mr. E. O. Orpet, of South Lancaster, Mass. It is known as the Lancaster Elm. Mr. Orpet gives the girth at six feet from the ground as 24 feet at the present time.

BOTANIZING IN NEW JERSEY.—On June 23d, it was my privilege to be on the Long Island plains. I left the train at a station about twenty-five miles from Brooklyn, and spent half an hour in suppressing exclamations. About the broad treeless level were patches of dull green Goat's-rue, the stiff stalks each terminating in a head of red and creamy bloom, with individuals like sweet peas. Here and there rose a slender leafless spike of marvellous grace from a rosula of spatulate root-leaves pressed close against the earth, the white lily-like flowers of the stalk all mealy looking,—*Aletris farinosa*.

Large areas of Killcalf were pink and white with large waxy bells, and flat on the ground spread a carpet of purple *Polygala polygama*. One of these which I dug up had a runner under the surface bearing a series of pallid cleistogamous flowers as large or larger than the aërial ones.

All these I saw in bloom for the first time; but familiar John's-wort and yellow clover verified the strangeness of the scene. Scarcely a daisy or any rank weed grows on those parts of the plains even moderately remote from dwellings; but all the plants are strictly selected to suit the soil, are mostly low and seem to live in perfect harmony or pleasing contrast, as to color, with their surroundings as though they had grown to know and understand the plains and their sister herbs through long ages of life.

Late July will find the linear-leaved aster blooming in great patches, Nuttall's *Polygala*, Lespedezas, the small and delicate *Asclepias verticillata*, various sunflowers, Blue Curls, *Eupatorium hyssopifolium*, a procumbent *Stachys* and *Rhus copallina* in bloom by every fence. Cloves, Sweet Pepper Bush, Meadow-beauty, *Apios* and golden-rods in every moist depression. I once found a solitary yellow fringed orchis flourishing in the dryest of spots on all the plains.

I said to a friend, after my stroll, "It is strange the Plains-folk ever have flower gardens when there is so little need." Yet they do.

E. NEWLIN WILLIAMS.

THE FLOW OF SUGAR MAPLE SAP.—Investigations upon the flow of sap have been made during the last few years by Messrs. Wood, Morse & Stone, at the New Hampshire State Agricultural College (Durham), one of their aims being to determine the flow of sap from different depths of the wood. After a long series of careful observations, taking into account the time of flow, the quantity of sap and the percentage of saccharose from different depths, they have summed up the results of their experiments in the following statements (Bulletin 32): "The results obtained in these studies upon the flow of sap tend to show that more sap flows from a deep hole than from a shallow one. The exact depth to which a hole should be bored is unsettled, and may prove to depend on the size of the tree."

A LARGE HONEY LOCUST TREE.—Mr. Benjamin Heritage, of Mickleton, N. J., sends us an account of a remarkably large Honey Locust tree growing at Mullica Hill, N. J. This tree is eight feet, four inches in circumference, two feet from the ground; and seven feet, two inches, at four feet from the ground. It would be interesting to know whether there are any larger specimens of this tree. It varies much in its spines. Some trees are almost free from thorns.

A NEW ENGLAND ELM.

INTENTIONAL SECOND EXPOSURE

THE CHIMNEY SWALLOW. — I have just looked through—or read, in truth—the volume of MEEHANS' MONTHLY for 1896, and if the conductors have not printed as much Chimney Swallow literature as they wish, I would like to add a word.

I have watched them through many years. At nesting time a bird will select a dead limb on a tree, preferably a cherry, because the twigs are brittle and snap off easily, and having selected a twig, instead of attempting to break it off during rapid flight, it will, by a flutter of its wings, seize the twig in its bill and by a sudden twist of the head snap it off. Audubon says they seize the twig with their feet, but if the swallows of Kentucky did that they must have been of a different variety from any that I have seen. Their feet are so formed that I believe they could not do it if they should try. Some authorities say the nests are built of pellets of mud, exactly describing the nest of the Barn Swallow.

As to how they build their nests, Audubon says the bird is furnished with glands which supply the unctuous matter with which it fastens its nest. Another authority says "each of these twigs is firmly fastened to its fellow by an adhesive saliva secreted by the bird. * * * When dry the saliva hardens into a glue-like substance, apparently firmer than the twigs themselves," and so adhesive that in removing a nest, it will at times take a scale of brick with it.

The edible nests of China are composed entirely of this secretion, or "saliva" as Audubon terms it.

As to where they built before chimneys, —there was a tree about two feet in diameter, hollow to where it was broken off about thirty feet from the ground, standing near a small village in Southern Ohio, which, if you would watch about dark, you would see the swallows flocking toward it, and after circling around it tumbling down into it by dozens. Audubon cites a case of a large sycamore tree in Kentucky, in which the swallows roosted in great numbers. By careful inspection he satisfied himself there were at one time 9,000 birds in it. In many cases they roost and nest in caves and rocky precipices.

JOHN J. JANNEY.

Columbus, O.

For all that has appeared in relation to the swallow, the great point the discussion started with has not been made clear. It is in relation to the gum with which the twigs are fastened in the nests.

It was asserted first, it is believed, by Audubon, and the statement copied and re-copied by other bookmakers since his time, that the bird secretes this gum in glands in its throat; and it has been stated further that the edible birds'-nests of China are formed wholly from this secretion. Against this view it has been definitely ascertained that the edible nests are made up from a species of sea-weed which the bird brings from long distances, chewing it up to mould into the bird's-nest form.

Finding one error, others are suspected. No anatomist has found any gum-secreting glands. The ordinary salivary glands are there in their proper place, and rather larger in the chimney swifts than in other birds. It is reasonable to suppose that these glands should be large in order to supply the large amount of moisture required to dissolve the quantity of gum used by the bird in its nest building.

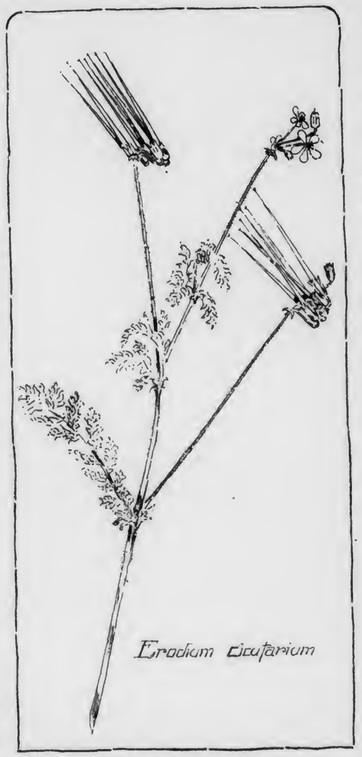
Further, the gum found in the swallows' nests in Eastern Pennsylvania proves by chemical examination to accord more with vegetable than animal gum, and it seems inconceivable that animals should secrete vegetable material.

Further, in nests of Eastern Pennsylvania, lumps of undissolved gum have been found, which were certainly gum from cherry trees.

And further, if the swallows' saliva is gum, or turns to gum, one might suppose that some bird caught for scientific examination would be killed while its mouth was full of saliva for its nest-building purposes, and thus the gum-secreting hypothesis brought within positive demonstration; but no such case is recorded.

MEEHANS' MONTHLY has given prominence to this question as much for the general lesson it teaches, as for the fact in itself. Scientific literature to-day is loaded down with theories drawn from supposed facts that cannot stand rigid examination—or at least have not been proved as a pillar of science should be proved before a philosophical structure is placed thereon. This is to the great injury of true scientific progress—and it is time for those who wish well to the promotion of useful knowledge, that all facts that seem exceptional to the general run of things should be rigidly protested and contested—not in a carping spirit, but that the proof should be unquestioned.

THE HERON'S BILL.—Under the natural order of *Geraniaceæ*, we have three genera that are tolerably well-known,—*Geranium* or crane's bill, *Erodium* or heron's bill, and *Pelargonium* or stork's bill. Varieties of the first and last are very common in gardens, but of the heron's bill we only know as a garden intruder or, as we generally say, a weed. Indeed it is known chiefly as a wanderer everywhere, for though its nativity is credited to Europe and Central Asia, American experience suggests that its original home must be very uncertain. It has made itself very much at home on the Pacific coast,—and is getting a good foothold in the Atlantic States. The specimen is from Meehans' Nurseries where, in that portion where it is not convenient to commence hoeing and weeding till the end of May, it is spreading rapidly. But its pretty pink flowers make it a favorite; and even the laborers seem loath to cut it away, when the cleaning up time comes around.



THE HERON'S BILL.

Very much of the pleasure in modern gardening consists in knowing how plants behave. That gardening which simply feeds the eye with beauty, or tickles the palate with good things to eat, is a welcome adjunct to human pleasure,—but is no less so from the fact of its ministering to intellectual wants at the same time. MEEHANS' MONTHLY loves to cultivate this faculty in its readers. The pretty heron's bill gives us much food for thought. Why do plants become weeds in some countries and not in others? The general reply is, because they find the climate and soil peculiarly favorable to their development. But this is not the whole story. The weeds that are common in our gardens are there chiefly because they flower and perfect their seeds so very early in the season, that the gardener has no time to hoe them out before the seeding has been accomplished. The hoeing does not injure the seeds. They nestle in the earth till Autumn, after the hoeing has been discontinued, then sprout, make plants that endure all winter, and, with the earliest breath of spring, bloom and seed again. Our little heron's bill is not one of the very earliest bloomers in this list, and in cultivated ground, where weeding begins early, it could never make a foothold, no matter how favorable soil and climate might be.

Another interesting lesson which the heron's bill affords, relates to the very important fact, recently made very prominent in connection with plant life, that growth in plants is rhythmic and not a regularly continuous movement. There are rests and advances in all the parts. At times one part of the growth will rest longer than another part,—and it is this variation, in the direction of the rests and advances, that makes all the numerous variations in plants that we see. This was not known even in Mr. Darwin's time. He was utterly unable to give any opinion as to the cause of variation.

In our heron's bill we see that the flowers at opening are erect on slender stalks. When they fade, they turn to a right angle with the main stem, when growth again takes another rest. When it again moves on, the little flower stem takes another curve this time going back completely on itself. By this time the growth energy in that direction is completely exhausted, and the heron's bill presents itself to us. It is safe to say, that if energy had been less intense in the direction taken,—something different would have been furnished us.

ABNORMAL GROWTH of PEACH BLOSSOMS.—Here is a description of peach blossoms or buds which occur on several seedling trees. There are two or more kinds of bud-blossoms. The five-lobed sepals which cover the calyx are very much contracted close around the exserted styles. The very small petals, which require a "weary eye" to distinguish, are nearly hidden by the lobes of the sepals. The stamens are entirely hidden inside and are short, weak, crooked and barren. The ovaries fill the calyx tightly. There are from one to five styles protruding. There is another kind of bud also on these peach trees; it shows the folded pink petals with no organs visible. I am watching, and hope my eye will not become too weary in this very interesting occupation. There has been another bud which turns into green leaves. It does look singular to see from one to five young peaches inside of one calyx, and if they do not drop off and if they will mature the fruit, what curious bunch peaches they will make; and if they grow large, it will not take long to fill a wagon bed with them. How would a bunch peach answer for market? And now comes the funny part, are they "Hermaphrodite" or Cleistogene? I enclose you some buds in this letter, so that you can examine them, then you can answer and explain the riddle of what they are in the botanical language of 1897. Further, these trees have other peculiarities: the limbs are clean switches, four or five feet long, generally free from side shoots or buds, the bark dark brown, the wood and leaves healthy. I have been thinking a good deal lately of getting a cross between the peach and the dogwood. Maybe this is a cross which came along in answer to my thoughts. A nurseryman nearby says that he never saw such peach trees and blooms anywhere heretofore. Am afraid that you may acknowledge the same thing, unless you have a very "weary eye." As you have more knowledge than I have about "hermaphrodite" strawberry plants, can you tell me why it is that the early blossoms of imperfect plants produce berries fine and large and the later ones on the same plants have imperfect berries? I have a kind which has imperfect blossoms, which has perfect fruit on them now and there were no perfect blossoms in bloom at the time and no insects to carry the pollen around—too cold for bees, bugs or flies. You would possibly call their bloom "hermaphrodite." I have not caught on yet to imperfect stamens fertilizing a blossom. Cannot exactly see how it is done.

Festus, Jefferson Co., Mo. F. K. STEELE.

This communication will have great interest to students in morphology, and those who make a study of what is now known as evolution. Structural botanists say that there is no reason why a peach might not have originated from an ancestor that had a fruit with five carpels or seed cavities, just as its relatives the pear, apple, or quince have. But, "once in a time" four carpels became abortive, and then the peach and other one-seeded fruits of the pomaceous family were born. The microscope reveals these carpels in an early stage of the peach and plum. The structural botanist will tell you, that there is no reason why these abortive carpels might not occasionally develop perfectly,—and this is what has been attempted in Mr. Steele's bunch peaches. It is worthy of note that the double-flowered peaches, which have their stamens and pistils turned into petals, and are therefore sterile, occasionally perfect the pistil and a few stamens. In this case, the product is always "bunch peaches." The writer does not remember whether all five carpels perfected, but three are not uncommon, and four have certainly been seen. They are irregular in size.

It has been suggested that the peach is a departure from the *Prunus Davidiana* of Northern Asia. It is a twiggy species,—and the twiggy character of the departures, noted by Mr. Steele, confirms the suggestion.

The varying character of sepals, petals, stamens, and styles, is now referred to the varying degrees of energy, and the direction the growth energy takes. This is believed to be the leading factor in all plant changes, and not external conditions as so many ancient men of the generation now passing away have contended for.

The term hermaphrodite has been adopted from zoology,—though scarcely expressive of the same conditions. The strawberry as well as many other plants will sometimes have flowers with stamens only, at other times with pistils only,—and again with flowers that have both organs perfect in the same flower. Hermaphrodite may not be accurate but it is expressive.

GENERAL GARDENING.

WELCOME BIRDS.

Think of your woods and orchards without birds!
Of empty nests that cling to boughs and beams,
As in an idiot's brain remembered words
Hang empty mid the cobwebs of his dreams!
Will bleat of flocks or bellowing of herds
Make up for the lost music, when your teams
Drag home the stingy harvest, and no more
The feathered gleaners follow to your door?
"The Birds of Killingworth."
—H. W. LONGFELLOW.

FLORAL DECORATIONS IN HONOR OF WASHINGTON.—On the 14th of May the great Monument to the memory of George Washington, which the National Society of the Cincinnati has been nearly a century in preparing, and finally determined to erect in the City of Philadelphia, which gave birth to the Nation which Washington preserved, was given in charge to the City authorities. Among the guests on the occasion was the President of the United States. A daily paper thus describes the floral decorations in the Union League Building, where the President and great dignitaries dined:

"The presence in this city of so many men of national reputation, and of so large a number of commissioned officers, as well as of representatives of foreign countries, made the occasion one of much more than ordinary moment.

The club house was gaily decorated with flowers in the greatest profusion; wild flowers from the forest; whole trees of dogwood, with their myriads of white blossoms; tall palms, orchids, and American Beauty roses were to be seen at every turn. The grand staircase was a perfect bower of dogwood blossoms.

The main hallway was divided longitudinally from the stairway to the new café by a row of tall-growing plants and dogwood trees in blossom and pedestals supporting busts of the great statesmen and soldiers of the nation. The new café, which had been cleared for the reception, was divided by similar floral barricades, the great chimney-piece at the west end being a perfect bank of the rarest of foliage plants and the most magnificent specimens of long-stemmed roses.

The dinner was served in the small dining-room on the second floor. Hosts and guests made a party of fifty-six who sat at the board. The decorations of the single long table were most elaborate and beautiful. In the centre was a large plaque of orchids of several varieties, interspersed with white carnations upon a background of new asparagus (the new decorative foliage), and on either side of it a trailing vine with sweet pea blossoms.

At each end was a semi-circle composed of roses of several varieties. Midway between the centre and each end, standing in large beds of American Beauty roses, were tall vases with long-stemmed specimens of the same flower. From end to end of the table on either side of the centre, and joining the arches of roses, ran borders of sweet peas and wild azaleas. The three chandeliers were profusely decorated with long-stemmed roses."

FLOWERS AT SALT LAKE CITY.—That sentiment is a greater power than logical reasoning in ruling mankind, can be illustrated by occurrences within daily experience. The sight of a flag under which an army is fighting gives more strength to the soldiers than would a lecture of an hour on the right or wrong of the cause. Few sentiments are stronger than those connected with flowers. They are welcome associates in all our festivities, and we send them in company of our friends when they go to their final resting place. Those who know how to suit the sentiment of flowers to the occasion, have as much influence for good in the community as the proverbial writers of the nation's songs.

The far-seeing business men of Salt Lake City seem alive to this great and powerful weapon. Fifty years ago, on the 18th of May, the emigrant pioneers first set foot on what is now Salt Lake City, and the founding in July is to be a day of jubilee. The Salt Lakians

struck on the happy thought of sending several carloads of flowers to the smaller towns that had sprung up since the founding of the one great centre fifty years ago.

The Butte (Montana) *Miner* refers to the coming of the flowers in such a pleasant way that we are sure our readers will peruse it with pleasure and profit :—

"The people of Butte are not unmindful of the courtesy which has been extended to them by the people of Salt Lake, who have announced that they will send a carload of lilacs to this city, the delicate compliments arriving on Sunday next. Another carload will arrive in Anaconda, and the citizens of that prosperous little city will also have cause for thanks and rejoicing. Salt Lake is not only one of the most beautiful spots on this rugged earth, but its people are among the most hospitable, enlightened and courteous. Its streets are broad, its parks expansive and its fame wide, but its broadest gauge is not reached until the character of its citizens is known. The people of Montana are pretty well acquainted with the people of Utah. Montana's citizens have been entertained in the city by the Great Salt Lake and know what a joy it is to be the guests of the beautiful metropolis. The remembrance which will come on Sunday in the form of sweet-scented lilacs will be all the more appreciated because in these cities the one thing lacking is the enchanting garb which adorns mother earth in other localities, and notably at Salt Lake. Another influence which will add to the appreciation of the recipients is that the men and women who are now living here represent distant lands and climes. Nearly or beyond the sea, where flowers and verdure gave to youth the charm and fascination which nature alone can impart. Salt Lake has made a most appropriate selection. The lilac is the certain harbinger of sunny days and springtime beauty. It will carry many a man back to the days of his boyhood and recall the scenes of the dear old home. It will lead many a woman back through memory's wondrous vale to hours of care-free happiness when the music of the birds and harvest songs filled all the air with merriment and love. To all it will be a message and a token from neighbors and fellow-workers in the holy mission of building up a mighty empire in the West, and both Butte and Anaconda will accept with gratitude the sweet assurance of friendship as expressed in nature's sweetest and most persuasive eloquence. The lilacs will be a reminder of the Pioneer Jubilee which is to be held in Salt Lake during July, and the delegations from Montana who will attend the celebration will be living responses not only to the fragrant address which will be delivered next Sunday, but to the innumerable evidences of friendship which have been received in the past. Butte has no lilacs to send to Salt Lake, but her crop of daisies is beyond compare—and a train full will unquestionably be forwarded to the Jubilee."

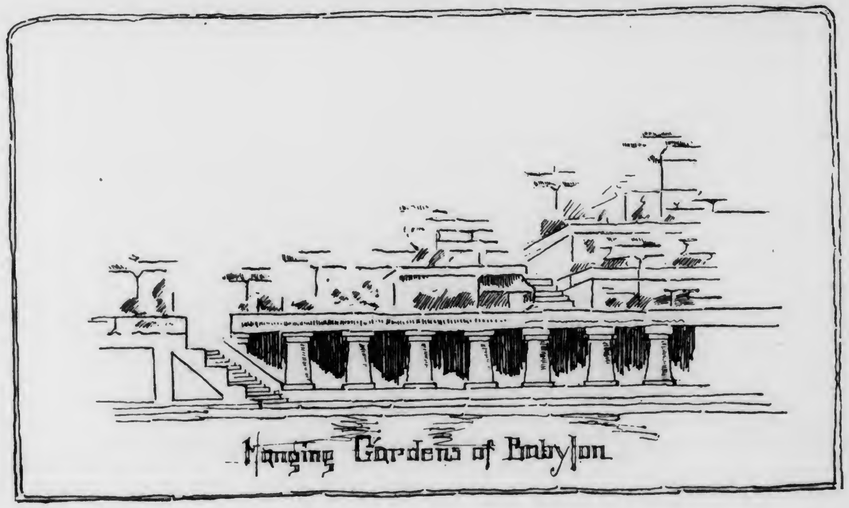
FORESIGHT IN GARDENING.—One of the misfortunes of garden lovers is that they frequently plan to do more work than can be carried on successfully. Almost every one who builds a house thinks he would like to have a nice garden, and the nice garden is consequently arranged. But when it is found, as it too often is found, that it requires a number of men, running up an expensive salary bill, to keep the place in good order, what was expected to be a pleasure becomes an annoyance and a bore. A small place well cared for and everything kept up nice and orderly gives far more satisfaction than an over-grown place that is a drag on the means of the proprietor. We know of a number of places, beautifully designed in the first instance, and which require some half a dozen hands to care for properly, dragging along with only one regularly employed, with perhaps an assistant, and even the money for this grudgingly bestowed. There is no comfort in seeking pleasure in this fashion. In all our operations we are too apt to think we can do more than we really can. In gardening matters, it is especially so.

FASHIONS IN FLOWERS.—There are fashions in flowers as well as in other things. Every one knows how popular is the Sweet Pea for cut flowers. Relying on the popularity, a florist in one of our large cities made it a successful point to have a large crop in bloom by Christmas and New Year's Day, supposing, of course, that it would be a profitable venture. To his surprise, he found the market for them to be exceedingly low, the reason being given, "that they were not in fashion at that season."

THE HANGING GARDENS OF BABYLON.—The hanging gardens of Babylon and the walls of that famous city, two of the seven wonders of the ancient world, were the work of Nebuchadnezzar, the "builder king" of the "queen of nations," who is said to have rebuilt or repaired nearly every city and temple throughout Babylon. These gardens he built to delight his Median queen, Amytis, to whom the flat plains of Babylon were exceedingly monotonous, and who longed for the mountainous scenery of her native land. They covered a square, each side of which measured four hundred feet, and were arranged in a series of terraces, four in number, rising one above another in graceful lines from the banks of the Euphrates to the summit. The ascent from terrace to terrace was by steps, and the terraces were supported by pillars upon which were laid flat stones, and upon these stones a water-proof covering over which earth was placed in sufficient quantities to provide for the roots of trees and shrubs planted there and watered by means of small conduits connected with a reservoir on the upper terrace. Every kind of tree and plant that could give pleasure by its beauty or fruit was brought from Persia, Arabia, Armenia, Greece, Egypt and India. Within the terraces were magnificent apartments and banqueting rooms, with walls of glazed brick, colored blue, red and yellow, and amid the groves were fountains and seats.

Boston, Mass. WARREN H. MANNING.

It may be noted here that a representation of the Babylonian hanging gardens is one of the special features recommended in Mr. Manning's report on the site for the proposed Milwaukee Semi-centennial.



INSECT POWDERS.—Many of the articles for the destruction of insects require time to prepare,—and often more time to apply. For the small tasks the amateur gardener is called upon to perform, it is labor saved to have some insect destroyer ready to hand that can be applied just at the time when it is seen to be needed. Such an excellent article as Hammond's Slugshot is a great convenience from this point of view. A package should always be at convenient command.

DRIED FLOWERS.—To dry flowers that they may keep their colors, may be done by an old and tried way. They are placed erect in a box deep enough that their tops will not extend beyond, then river sand is poured slowly and carefully around them until they are covered, when the box should be placed in a slow oven subjected to a continuous light heat for two or three days, at the end of which time they will be dry and still have their original colors.

"La Semaine Horticole."

THE HALL HONEYSUCKLE.—A Tennessee correspondent notes that he sent to the North for twelve plants of the Hall Honeysuckle, known in the catalogues as *Lonicera Halleana*, and, after receiving them, was surprised to find them the same as were growing wild everywhere along the roads and on hedges in that State. This honeysuckle is simply the *Lonicera Japonica* of Asia, and was introduced several years ago, by Mr. Hall, from Japan, and bears his name simply as the name of a variety of the species. Another variety was introduced, many years ago, under the name of *Lonicera brachypoda*. There is also another form of *Lonicera Japonica* that is known in catalogues as the Evergreen Japan. It is chiefly characteristic by its fondness for a creeping or rooting habit. This latter form has become well known in many parts of Pennsylvania, and is probably the one referred to by this correspondent. The Hall variety is not known to have become naturalized anywhere, so far, unless our correspondent is not mistaken in his identification.

FOREST FIRES.—This season, again, forest fires have been quite common and as destructive as ever they were. The estimate places the loss of timber at several millions of dollars before midsummer was reached; and yet it is contended that these fires are avoidable. It was hoped, when the different States undertook by legislation to prevent them, they would diminish, but legislation seems to be of no more value in this line than in many others. We have never known legislation to be of any great value in any horticultural or agricultural question. We can, at times, help by encouraging individual effort in various directions; but, when the States undertake to do all for us, they generally fail.

THE GLOBE ARTICHOKE IN ORNAMENTAL GARDENING.—It always seems to us that we look too much for decorative plants abroad, neglecting those of our home gardens. In your note on Globe Artichokes, the good value of the plant alone is considered. It is beautiful, with its soft grey-green foliage, and masses with excellent effects with the tall growing cannas, the aralias and caladiums. In Oakland, Cal., it was once our misfortune to live in a rented house. At the end of the side yard, and plainly in view of the passersby, was a miserable, rough board fence, whitewashed to glare out all its many imperfections unto every ones' recognition. We planted, first, moonflowers to climb up its face. Then trenched and manured the ground for a width of eight feet in front of the fence. Two hundred common tall-growing canna bulbs were planted in three rows each, alternating to prevent seeing them in lines from the front.

Five feet apart, were placed nine artichoke plants. This produced a very pleasing effect from the front street, and, as you see, cost almost nothing to make it except a little labor and thought. The German people make pompoms out of the expanded and dried seed heads, adding Pampas Grass to fill their house vases. If they only forget to use cheap dyes to color them, the effect is good. If it is ever our good fortune to live in Philadelphia again, we will certainly try globe artichokes as a plant for our hall vases. M. D. ESHLEMAN.

Fresno, Cal.,

NEW OR RARE PLANTS.

ERYTHRONIUM JOHNSONI.—Under the name of *Erythronium Johnsoni*, the *Garden* has a colored plate of one of the loveliest of the beautiful family of Dog-tooth Violets. The shade of color is reddish-pink. It was discovered in Southern Oregon by Mr. A. J. Johnson, whose name it bears.

ACTINIDIA KOLOMITKA.—This is a great acquisition to our list of hardy climbers. It is much superior to the now well-known *A. polygama*.

The leaves are partly tinged with a whitish-pink on the upper surface, giving it a very striking appearance. At the present writing (June 5), the vines are covered with pretty white, bell-shaped flowers, not unlike those of the *Halesia*. We have not yet been favored with fruit on our plants, but look forward to having some this season.

[It is a native of Japan, and was given its specific name by Maximowicz—but it is now regarded as identical with Lindley's *Actinidia callosa*.—EDS.]

Nandina domestica.—This has generally been classed as a greenhouse shrub, but, with slight protection, it has stood our last severe winter.

It is a handsome, erect grower, with beautiful, ternately-compound leaves and terminal panicles of white flowers with yellow anthers, followed by red, coral-like berries. I believe there is also a white-berried variety. I have no doubt but in a sheltered position, this would prove a very handsome plant.

Enkianthus Japonicus.—This is another Japanese shrub, belonging to the Ericaceous family, which has hitherto been given a place in the greenhouse. It has stood the winter here, in good shape, without any protection, and when once established will, I have no doubt, prove welcome in our collection.

Verbascum olympicum.—This new mullein has been in bloom here for the last two weeks. It is a very welcome addition to our list of herbaceous perennials.

OPUNTIA RHODANTHA.—SEE PAGE 134.

The flowers are large, of a clear sulphur-yellow, borne on stems about four feet in height, its rich white foliage adding to its attractive appearance. It should find a place in every collection. JOHN W. DUNCAN.

Greenwich, Conn.

CORYLOPSIS PAUCIFLORA AND C. SPICATA.—*Corylopsis pauciflora and C. spicata* have not, considering size of leaves, much similarity with each other. Both are low shrubs with spreading, slender branches, bent this way and the other, with leaves bluish-green on the upper side—grayish-white underneath and veins terminating at the edge in small teeth. *Corylopsis pauciflora* (Siebold and Zuccarini), but lately introduced by Veitch, under its proper name, I noticed for the first time in the "Forest Garden" at Munden (Han.,) six years ago. The plant has thin, smooth branches and smooth petioles, from ½ to 1 cm. long. The ovate leaves, from 2.5 to 4.5 cm. long, are at the base uneven, cordate and only hairy along the veins—later on, almost glabrous. When sprouting they are beautifully red-brown, maintaining this color along the edge for some time.

The flowers are somewhat larger than those of *Corylopsis spicata*, standing 2 or 3 only in short, hanging, appearingly numerous racemes, whose stipules are smaller than in *C. spicata*. *Corylopsis spicata* (Siebold & Zuccarini) has been under culture for about 30 years. Its branches are hairy; petioles from 2 to 3 cm. long, also covered with hair. The leaves from 7 to 12 cm. long are slightly brown while sprouting, and from rotund to ovate, with a partially uneven, cordate base, hairy on the under side, especially upon the veins. The flowers are about 8 mm. long and stand 5 to 10 on loose, pendant racemes.

Translated from Müller's Gartner Zeitung.

A. C.

THE HALL HONEYSUCKLE.—A Tennessee correspondent notes that he sent to the North for twelve plants of the Hall Honeysuckle, known in the catalogues as *Lonicera Halleana*, and, after receiving them, was surprised to find them the same as were growing wild everywhere along the roads and on hedges in that State. This honeysuckle is simply the *Lonicera Japonica* of Asia, and was introduced several years ago, by Mr. Hall, from Japan, and bears his name simply as the name of a variety of the species. Another variety was introduced, many years ago, under the name of *Lonicera brachypoda*. There is also another form of *Lonicera Japonica* that is known in catalogues as the Evergreen Japan. It is chiefly characteristic by its fondness for a creeping or rooting habit. This latter form has become well known in many parts of Pennsylvania, and is probably the one referred to by this correspondent. The Hall variety is not known to have become naturalized anywhere, so far, unless our correspondent is not mistaken in his identification.

FOREST FIRES.—This season, again, forest fires have been quite common and as destructive as ever they were. The estimate places the loss of timber at several millions of dollars before midsummer was reached; and yet it is contended that these fires are avoidable. It was hoped, when the different States undertook by legislation to prevent them, they would diminish, but legislation seems to be of no more value in this line than in many others. We have never known legislation to be of any great value in any horticultural or agricultural question. We can, at times, help by encouraging individual effort in various directions; but, when the States undertake to do all for us, they generally fail.

THE GLOBE ARTICHOKE IN ORNAMENTAL GARDENING.—It always seems to us that we look too much for decorative plants abroad, neglecting those of our home gardens. In your note on Globe Artichokes, the good value of the plant alone is considered. It is beautiful, with its soft grey-green foliage, and masses with excellent effects with the tall growing cannas, the aralias and caladiums. In Oakland, Cal., it was once our misfortune to live in a rented house. At the end of the side yard, and plainly in view of the passersby, was a miserable, rough board fence, whitewashed to glare out all its many imperfections unto every ones' recognition. We planted, first, moonflowers to climb up its face. Then trenched and manured the ground for a width of eight feet in front of the fence. Two hundred common tall-growing canna bulbs were planted in three rows each, alternating to prevent seeing them in lines from the front.

Five feet apart, were placed nine artichoke plants. This produced a very pleasing effect from the front street, and, as you see, cost almost nothing to make it except a little labor and thought. The German people make pompoms out of the expanded and dried seed heads, adding Pampas Grass to fill their house vases. If they only forget to use cheap dyes to color them, the effect is good. If it is ever our good fortune to live in Philadelphia again, we will certainly try globe artichokes as a plant for our hall vases. M. D. ESHLEMAN.

Fresno, Cal.,

NEW OR RARE PLANTS.

ERYTHRONIUM JOHNSONI.—Under the name of *Erythronium Johnsoni*, the *Garden* has a colored plate of one of the loveliest of the beautiful family of Dog-tooth Violets. The shade of color is reddish-pink. It was discovered in Southern Oregon by Mr. A. J. Johnson, whose name it bears.

ACTINIDIA KOLOMITKA.—This is a great acquisition to our list of hardy climbers. It is much superior to the now well-known *A. polygama*.

The leaves are partly tinged with a whitish-pink on the upper surface, giving it a very striking appearance. At the present writing (June 5), the vines are covered with pretty white, bell-shaped flowers, not unlike those of the *Halesia*. We have not yet been favored with fruit on our plants, but look forward to having some this season.

[It is a native of Japan, and was given its specific name by Maximowicz—but it is now regarded as identical with Lindley's *Actinidia callosa*.—EDS.]

Nandina domestica.—This has generally been classed as a greenhouse shrub, but, with slight protection, it has stood our last severe winter.

It is a handsome, erect grower, with beautiful, ternately-compound leaves and terminal panicles of white flowers with yellow anthers, followed by red, coral-like berries. I believe there is also a white-berried variety. I have no doubt but in a sheltered position, this would prove a very handsome plant.

Enkianthus Japonicus.—This is another Japanese shrub, belonging to the Ericaceous family, which has hitherto been given a place in the greenhouse. It has stood the winter here, in good shape, without any protection, and when once established will, I have no doubt, prove welcome in our collection.

Verbascum olympicum.—This new mullein has been in bloom here for the last two weeks. It is a very welcome addition to our list of herbaceous perennials.

The flowers are large, of a clear sulphur-yellow, borne on stems about four feet in height, its rich white foliage adding to its attractive appearance. It should find a place in every collection. JOHN W. DUNCAN.

Greenwich, Conn.

CORYLOPSIS PAUCIFLORA AND C. SPICATA.—*Corylopsis pauciflora and C. spicata* have not, considering size of leaves, much similarity with each other. Both are low shrubs with spreading, slender branches, bent this way and the other, with leaves bluish-green on the upper side—grayish-white underneath and veins terminating at the edge in small teeth. *Corylopsis pauciflora* (Siebold and Zuccarini), but lately introduced by Veitch, under its proper name, I noticed for the first time in the "Forest Garden" at Munden (Han.,) six years ago. The plant has thin, smooth branches and smooth petioles, from ½ to 1 cm. long. The ovate leaves, from 2.5 to 4.5 cm. long, are at the base uneven, cordate and only hairy along the veins—later on, almost glabrous. When sprouting they are beautifully red-brown, maintaining this color along the edge for some time.

OPUNTIA RHODANTHA.—SEE PAGE 134.

The flowers are somewhat larger than those of *Corylopsis spicata*, standing 2 or 3 only in short, hanging, appearingly numerous racemes, whose stipules are smaller than in *C. spicata*. *Corylopsis spicata* (Siebold & Zuccarini) has been under culture for about 30 years. Its branches are hairy; petioles from 2 to 3 cm. long, also covered with hair. The leaves from 7 to 12 cm. long are slightly brown while sprouting, and from rotund to ovate, with a partially uneven, cordate base, hairy on the under side, especially upon the veins. The flowers are about 8 mm. long and stand 5 to 10 on loose, pendant racemes.

Translated from Müller's Gartner Zeitung.
A. C.

INTENTIONAL SECOND EXPOSURE

HYBRID CLEMATIS.—The beautiful hybrid Japanese Clematises, of which *Jackmani* is the type, are now well-known and appreciated. Other species are now being taken in hand and improved, and some beautiful forms result. Our pretty Texan species, *Clematis coccinea*, is one of these, with flowers three inches and of spreading character, that have been produced. One, known as the Star of India, is considered a gem by lovers of the hybrid Clematis.

THE HARDY FLOWER GARDEN.

THE WALL-FLOWER.—The wall-flower is not as popular in American gardens as it deserves to be, chiefly, we think, because too much is expected of it as a perennial. To succeed well, young plants should be raised from cuttings every year. These do better than even those raised from seed. Although growing on the ruined castle walls of the Old World, where one would suppose it would be exposed to high temperature, it is never found to thrive well in full exposures in America. Certainly, with us, it prefers partial shade. The peculiar odor is especially agreeable to most people. It is in this connection, as much as for the beauty of the blossoms, that it is appreciated.

IMPROVED VARIETIES OF FLOWERS.—In raising seedlings of ornamental trees, fruits or flowers, there are noted great variations in every character, from leaves to flowers and fruits. It is the practice of those who wish to improve or obtain new varieties, to watch for such variations as may be in the line they desire to improve. For instance, a plant which usually bears entire leaves may have some seedlings with the leaves slightly lobed. If seeds are taken again from these, the probabilities are that fine, cut-leaved varieties will eventually be obtained. So with the forms or characters of flowers. Any tendency noted in a seedling to vary in a line we may think to be an improvement is selected for seed, and in that way the desired improvements are secured in the progeny.

The Germans, who are famous for their patience and are willing to wait two or three years for good results, are among the foremost in this branch of flower progress. Nearly all our improvements in garden flowers are made known to us by the efforts of German seedsmen, although the French are rapidly competing with them in this line.

BEAUTIFUL CALIFORNIA FLOWERS.—A large number of remarkably beautiful flowers are natives of California, which will not thrive in Eastern gardens; but they seem to find a favorite home in the climate of England.

Travelers returning from Great Britain are continually calling attention to the beautiful natives of California, which thrive luxuriantly in English gardens, and regret that they cannot have the satisfaction of growing them here. It would serve a very pleasing purpose if some special attention were paid, on the Pacific Coast, to the cultivation of some of these plants. Such an experimental garden would attract especial attention of the eastern traveler in that country.

A friend, who journeyed in the Old World last summer, spoke most enthusiastically of the *Garrya elliptica*. The writer of this paragraph, in his California wanderings, has noted its great beauty on some of the high mountains,—especially those in the Yosemite Valley. It seemed to be especially fine near water-falls and where misty clouds are continually distributing dew. It would probably not do well in the low lands of California, where experimental gardens, in which California plants could be tested, are located; but in the higher latitudes, it certainly could be grown in gardens.

We have always had an idea that Vancouver Island will grow to perfection everything that seems to find itself so much at home in the climate of Great Britain. As the means of communication with the northern portions of the Pacific become elaborated, we shall look on cities like Victoria as among the great centers of the horticultural trade, and, incidentally, of experimental flower gardens.

TWO NEW CACTUSES.—*Opuntia rhodantha* and *O. xanthostema*. Photographed in L'. Spaeth's arboretum, Berlin; engraved by A. Rheder.

Among the best and most interesting novelties of plants enduring winter in the open ground, hardy cactuses ought to be more known. These plants afford means to produce in our gardens sceneries of strange and peculiar enchantment. Although known since two decennials, that there are some opuntias hardy enough to live over winter in the open ground, it remained to C. A. Turpus, in Colorado, to prove, that besides them and new opuntia varieties, other Cactaceous plants, such as Cereus, Mammillaria and Echinocactus will also answer for that purpose, so that open air cactus-groups may afford greater variation, by the introduction of them.

The opuntias, though, will take first rank, owing to their rapid growth (and vigorous) and their flowers of great beauty, in which the principal attractiveness consists. Without flowers, cactuses appear rather more strange than admirable; while cactus groups in full blooming condition, with those enchanting flowers, afford a most pleasing appearance to the eye.

Until lately the variation of color in opuntias was limited, because only the yellow color was dominant. This defect is removed now, since in 1893, C. A. Turpus discovered two new species, named and described by Prof. Dr. Schumann as *Opuntia rhodantha* and *Opuntia xanthostema*, bearing radiant carmine-red flowers of eight centimeter diameter. The illustration, on page 133, is produced from a photo of a plant in Spaeth's arboretum, representing *O. rhodantha* Schum., and gives a true picture of the habitus of the plant and form of flowers.

Not a little is added to their beauty by the yellow-colored anthers, sitting upon the red stamens. The fruit is smooth (without prickles.) The rather large stem-joints are obovate, of gray-green color and armed with spines. The other kind, *Opuntia xanthostema* Schum., resembles the former very much; the flowers are more intense carmine-red and anthers deep yellow. The fruit is covered with prickles. Various other kinds are especially to be recommended, the light yellow-flowering *O. comanchica* Engelm., and *O. Rafinesquiana* var. *Arkansa* with light yellow, in the centre light and brown (fawn) colored flowers.

All hardy cactuses deserve more attention in beautifying our gardens. A flowering group with their large, flaming flowers in divers colors ever have a fascinating effect. Even without flowers, a grouping of luxuriant-growing cactuses will never fail to attract attention.

Translated from La Semaine Horticole.

FRUITS AND VEGETABLES.

LOUIS GAUTHIER STRAWBERRY.—So far as our markets are concerned, there seems to be a general decline in the strawberry. The berries are not generally as large or of the fine strawberry flavor common years ago. Amateurs who like fine fruit in their own gardens regret this. Americans visiting Europe notice this difference and wonder why we cannot have the fruit as large and fine here as there. Our plants yield well; we have strawberries for the million. The lower orders in the Old World cannot enjoy the fruit as the poorer people here do; but why not have the large, fine fruit as well? It was once believed that the foreign varieties were not adapted to our soil and climate; but the Rev. J. Knox, of Pittsburg, settled this matter long ago. The Jucunda and Triomphe de Gand held the palm here for years against all our American seedlings.

It is pleasant to note that efforts are again to be made with notable foreign kinds of great reputation. Mr. A. T. Goldsborough, of Wesley Heights, Washington, D. C., is trying what can be done with Louis Gauthier, which so conservative a leader as the Editor of the French *Revue Horticole* declares as a remarkable improvement on even the many good kinds in existence in France. In that country, fruit has been produced measuring nine inches in circumference. Mr. Goldsborough has fruited young plants in frames, indicating that it will fully sustain its French character here.

THE HARDINESS OF THE LOGAN RASPBERRY-BLACKBERRY.—In 1895, MEEHANS' MONTHLY recorded the lack of entire hardiness of the canes of the Logan Berry, and advised that the vines be covered with earth to protect them, the work of protection being facilitated by the trailing nature of the plant. The *Rural New Yorker*, in a recent issue, confirms our statement as applied to its section, and expresses regrets that such a promising novelty should have such a drawback attached. It further suggests the possibility of profit in growing the plants even at the expense of covering. Trial plants in the Meehans' Nurseries were damaged during the past winter, although protected by fodder, showing this covering to be insufficient. Nevertheless a fair crop of fruit is being had.

THE GOOSEBERRY AND CURRANT CATERPILLAR.—Mrs. Seliger gives, in her happy way, the following account of the doings of the Gooseberry and Currant Caterpillar, in the *Hartford Times*. Dusting the bushes with Hellebore powder is an effective weapon to fight them with:

"Of the Currant Worm, a certain gleaner wrote lately: 'Who can tell whence they came—the millions of Currant Worms that spring up over night and in whose wake quick destruction follows?' The life history of this serious pest may be learned twice each season by careful observation. It is no mystery like the 'speckled shad.' With the first gooseberry blossoms appears also from a small pupa, which has lain dormant over winter under the surface of the earth, a little yellowish wasp, or saw-fly. She is shy in her deportment, and while sipping the nectar of the gooseberry flowers, that sustain her life, she also deposits, as an ungrateful reward, her eggs along the projecting ribs on the underside of the gooseberry leaves, never at their upper surface, all laid nicely in a row, but sometimes scattering one here and one there at irregular distances. Her Latin name is *Nematus ventricosus*. And this same creature operates on the currant bushes in like manner, as soon as their blossoms appear. Her eggs hatch in a few days to small worms, hardly recognizable at first, yet crawling and eating right away, eating little round holes the size of a pin-head in the leaves. A trained eye detects them easily. The wasp is shy; she begins her work in the middle of the bushes, where she is hidden in her nefarious work. As the worms grow larger they completely skeletonize the leaves; and when generally noticed, they are nearly full grown and cling to the outer edges of the leaves, and by their weight and number they cause the young boughs to bend soon. Their work finished, they drop to the ground, crawl loosely under the dirt, and are transformed to a pupa, only to reappear a second time, at the end of July, when a new set of leaves have grown and the fruit begins to ripen. This time her destruction tasks the vitality of the bushes still worse, as they are setting leaf and fruit buds for next season, and also must clothe themselves a third time with foliage. Nature struggles always bravely for supremacy."

BARK CULTURE.—Those who have carefully watched the processes of nature in the growth of trees must have noticed that she takes especial pains to get rid of old bark. At times, however, vital power is weak, and she is not able to accomplish the work which she sets herself to do. It then becomes the province of the cultivator to help nature in this work. Washing the bark with a soapy solution is an excellent method of assisting nature in this way. A pear tree came before the observation of the writer, a couple of years ago, in which a species of fungus had attacked the bark. It was a species which does not penetrate to any great depth. The bark, in this case, was quite rough in patches, while the other portions were smooth. Trees thus affected are very often seen. The owner of the tree in question was recommended to wash the bark with common soap-suds. The application had the desired effect, and at the present time, the trunk is as clean and healthy as it is possible for a pear tree to be. The tree is now about ten years old.

PEARS FOR THE AMATEUR GARDEN.—A correspondent asks what are six or eight of the best varieties of pears for a private garden. While there are doubtless others that would be equally pleasing, yet the following will be endorsed as giving every satisfaction: Bartlett, Fred Clapp, Howell, Sheldon, Lawrence, Anjou and Seckel. These are well known and tried varieties, and should receive first consideration in making choice. Of course, this is meant in a general way, as occasionally some one kind of fruit has a special taste for luxuries in soil and climate, and may form the exception that occurs in all rules.

PRODUCTIVENESS OF SEEDLESS FRUITS.—A seedless, or comparatively seedless, pear, known as the Rutter, is wonderfully productive. The Denver *Field* notes that J. F. Spencer, on Fruits Ridge, near Grand Junction, Mesa Co., Colorado, has propagated a seedless variety of apple, and has twenty-seven trees in full bearing. They exceed all others in abundant bearing. It would be interesting to know whether extra fertility of fruit is always associated with the seedless character. How about the little grape known as the Currant of Commerce?

MONSTROSITIES IN FRUITS AND FLOWERS.—Having seen different articles in the MONTHLY regarding curious fruits, growths, etc., I am led to mention a few instances that have come under my notice this spring. Every one, no doubt, has seen double fruits of some kind, and I remember we children used to set great store on finding double May Cherries. It seemed that certain trees were more given to these freaks than others, and so this rule has generally held true of most any kind of fruit; but it seems that this year has broken the rule, for every peach tree we have (embracing some thirty or more varieties) has double fruit, and often in great numbers. I counted eight double peaches on one little tree not higher than one's head. Trios are as common as double fruits usually are, and we have found one of four. Usually, one side of double fruits is stunted and seldom perfects itself, but this is an exception this year, and both sides seem perfect.

Some of our Lady-Slippers, *C. pubescens*, have two flowers, and one double *Narcissus poeticus* has two flowers to the stalk.

I would add double plums and mulberries to the list, and doubtless many others will be found when they become more matured.

Clinton, Arkansas. C. E. PLEAS.

THE GRAVENSTEIN APPLE.—In the April number of MEEHANS' MONTHLY, this apple is spoken of as "never been popular in America. Possibly it is a poor keeper." In my father's fine orchard, in Western New York, no apple stood higher in our estimation than this. It was not only a beautiful apple, but a first-class apple in every way, always keeping well, sound, brittle and aromatic to the last. But not until I removed to Nebraska did I know of its rare virtue as a canning apple. My parents sent me a barrel of fruit from the old orchards, and among the varieties was the Gravenstein. As soon as the barrel was opened, I detected the well-known odor, and remarked to my husband "There are Gravensteins in that barrel." Wishing to keep and enjoy them as long as possible, I canned them, making jelly of the skins and cores, which proved the finest apple jelly I ever made. The color, a mixture of crimson and gold; and the taste—well, I cannot describe it. Bnt when those cans of apples were opened, the aroma could be distinguished throughout the house, like opening a can of *Western New York Bartlett Pears*—and such richness! Such a wonderful sprightly flavor! in fact, we never ate any canned apples that could be compared with them—rich, firm, golden quarters, with the delicious syrup; no epicure could ask for better. If I could have but one variety of apple, the Gravenstein would be my choice.

MRS. FREDERICK C. JOHNSON.

Victor, Colorado.

WHITEWASH FOR SCALE.—A Tennessee correspondent refers to Mr. Saunders' note in regard to the destruction of scale by lime wash, and remarks that he practised it successfully a half a century ago, adding, however, a little soot with the lime wash in order to take away its glaring color. It has also been in use by the old German settlers of Pennsylvania for a couple of centuries, who applied it not merely for the destruction of scale, but for all other insects and injurious fungus. No trees can be healthier than those old-fashion people can present. No one need fear the San Jose Scale, or any other scale, who applies annually a coat of whitewash as described. So many of these admirable horticultural practices of our fore-fathers have been suffered to fall into disuse to be replaced by other more complicated and less satisfactory applications that correspond. Like Mr. Saunders, those who bring these old, worthy practices again to the fore-ground deserve more thanks than those who are continually talking of new notions.

A NEW USE FOR SURPLUS PEARS.—Surplus apples can be dried and then sold, or turned into cider, for which there is also usually a profitable market; but the use of surplus pears has been comparatively limited. In France, they are usually ground into a form of cider known to the English as perry; but it has never had anything near the popularity that cider obtained from apples has. It is now said that a very profitable use can be made of the surplus pear by turning them into syrup. About three gallons of cider can be obtained from a bushel of pears, and out of these it is said that syrup enough, quite equal to cane syrup, can be obtained to make the operation profitable.

BIOGRAPHY AND LITERATURE.

KNOWN BY THEIR FRUITS.

Lo the disregarded Darnel
With itself adorns the wheatfield,
And for all the vernal season
Satisfies the farmer's eye,—
But the hour of harvest coming
And the thrasher by-and-by,
Then a barren ear shall answer,
"Darnel, and no Wheat, am I."
—JAMI.

ROBERT DOUGLAS.—Few men in America have ever been esteemed for brilliant services to Horticulture, or more beloved by his fellows for his amiable qualities, than Robert Douglas, of Waukegan, Ill., who was found dead in his office chair on the 1st of June. He had had a paralytic stroke a month before, but seemed to have measurably recovered, and maintained his active interest in every good work about him to the last. He was born in Yorkshire, in England, but from early life had a passion for gardening. Even when an apprentice to a tailor he closely cultivated a 20-foot square lot of ground, and was warmly interested in matters connected with natural history, in which a love of birds was especially prominent. He first came to Canada, then to Vermont, finally settling in Waukegan. He was very fond of traveling, and was one of the first to make an overland trip to the Pacific by the Humboldt River route. America owes him a debt of gratitude as being the first to show that evergreens could be raised as profitably in the New as in the Old World. He was also the first to know the great value of the Western Catalpa, *Catalpa speciosa*, for timber,—and the first to prove, by actual experiment, that forestry planting could be made profitable in America. The superior hardiness of the Colorado form of the Pacific species of coniferæ, which knowledge has been worth many thousands of dollars to Colorado, was the result of his close observation and intelligence. No one connected with horticulture in America has ever passed away with such widespread regret. No one will ever be more keenly missed by a wide circle of friends.

EARLY GARDENING IN CHICAGO.—Mr. Edgar Sanders has recently given the Chicago *Times-Herald* an interesting sketch of early gardening in Chicago. After recounting the early gardening of the amateur lovers of flowers, among which comes in a fuller account of Dr. Egan than the notice that recently appeared in MEEHANS' MONTHLY, he tells of the rise of the florist business, for which Chicago has become famous. Of the first attempt, he says:

"A few words as to the florists of forty years ago. These, in the spring of 1857, were just three in number, each with about fifty feet of greenhouse room each, myself adding the fourth that year.

Samuel Brooks, the pioneer, built the first commercial greenhouse on Clark Street, about where the post office lot is now, in 1843. In 1853 he moved out to Hyde Park, where I found him. He was born in London, in 1793, and was there a successful florist, and is to this day called by the English 'The Father of the Chrysanthemum.' He died in September, 1875. The history of this man is replete with interest, but I have no time to go into this."

THE EMPRESS TREE. — The remarkable Japanese tree, *Paulownia imperialis*, commonly known as the Empress Tree, is very ungainly in appearance, when in its younger stage; but when old enough to bloom, it more than compensates for this by the great beauty of its blue, sweet-scented flowers. These are shaped something like the Gloxinia, or, perhaps one might say, more like a large-flowered Catalpa. The leaves, indeed, have a considerably Catalpa-like appearance, although belonging to a very different natural order. It has obtained the name of Empress Tree from an erroneous belief that it was named *Paulownia* in honor of an Empress of Russia. That this is a mistake is shown by the statement of Dr. Siebold, who first discovered and named the genus, in which he says that he named the tree for a Princess of Holland.

DISCOVERY OF THE VICTORIA REGIA.—In going through Central America, Mr. A. D'Orbigny made the acquaintance of a Spanish missionary, Father La Culva. During a conversation with him, the name of the famous botanist, Haenke, was mentioned. This botanist was sent out in 1801 by the Spanish Government to investigate the vegetable productions of Péron. Father La Culva and Haenke were in a boat with savages, on one of the rivers tributary to the Amazon, when they saw in a swamp such a beautiful and extraordinary flower, that Haenke fell on his knees, and, in a loud voice, praised the Creator for His power and greatness in His grand work of nature.

The *Victoria regia* was again found, in 1820, by Bonpland, in Corrientes,—also in the same place, in 1827, by D'Orbigny. The latter sent specimens of this plant to Paris, gathered from the River Paranà. In speaking of the seeds, he said he learned from the natives that it was generally ground like maize and used under the name of Maïs d'eau (Maïs del Agua), and that it was an important article of commerce. Bonpland says that the flour obtained from the seeds is superior to the finest quality of wheat.

In 1833, Dr. Poeppig first published a description of *Victoria regia* under the name of *Euryale Amazonica*.

Translated from La Semaine Horticole by Sarah D. Lanning.

In 1838, Dr. Lindley discovered that the plant possessed characters which distinguished it from *Euryale*, and, with happy thought, honored this queen of the water lilies by the name of *Victoria regia*.

MRS. P. J. BERCKMANS.—Mr. P. J. Berckmans is so widely known and universally esteemed for devotion to the progress of horticulture in America, as well as for his high personal character, that the sympathy of a wide circle of friends will go with him in the death of Mrs. Berckmans, which occurred on the 12th of May. Mr. and Mrs. Berckmans settled in Augusta, Ga., in 1856, removing from Plainfield, New Jersey. To which the father of Mrs. P. J. Berckmans came from Belgium.

FOLLY, IN THE NAME OF SCIENCE.—The saying of a literary cynic of the past, that "A little learning is a dangerous thing," is nowhere better shown than in the line of what is known as bacteriology. Some people have actually been frightened into refusing to take bank-notes, for fear of the injurious microbes which some philosophers say abound in them; while whole communities are being frightened by ignoramuses in Boards of Health and other similar institutions. What is true of bacteriology is also true of chemical science. Much has been made of the slight use of sulphate of copper in coloring French peas and other garden products. Mr. Finley Acker, a prominent and highly-respected provision dealer of the city of Philadelphia, declares that in no case could it be shown that any injury whatever resulted from this coloring. Still, he would have the labels say that they have been artificially colored, so that no customer who objected to its use might be deceived.

"FUNGOID" DISEASES.—European Horticultural journals have caught up the error, started and still practised in our Government and State publications, in styling diseases which owe their existence to the work of parasitic fungus, "fungoid" disease. The word fungoid signifies something that has the appearance of a fungus. But they do not mean this, they mean a disease caused by a fungus and not a disease that looks like a fungus. The distinction is very plain, and it is surprising that our learned friends, who are so fond of coining and applying Latin and Greek terms for every trifle and scientific manifestation, do not perceive the difference.

MRS. W. A. KELLERMAN.—The readers of MEEHANS' MONTHLY enjoy the suggestive notes of Mrs. W. A. Kellerman, of Columbus, O., and will be pleased to learn that she is equally appreciated by outside circles. At the recent annual meeting of the National Science Club, held in Washington, she was elected President for the ensuing year.

BRONX PARK BOTANIC GARDEN. — Mr. Samuel Henshaw, the well-known landscape gardener, of West New Brighton, S. I., N. Y., has been appointed head gardener in the new Botanic Garden at Bronx Park, New York.

GENERAL NOTES.

VAGNERIAN NAMES OF PLANTS.—In all large undertakings, much has to be left to subordinates. The offices have to be filled with dictionaries, encyclopædias, guides, and reference books of all kinds, for their use. It becomes a heavy trial when matters of mere detail have to be submitted to the head of the concern. The upsetting of accepted names of plants is leading to just this aggravation, and it is being severely felt in every large nursery establishment. In the Meehan nursery, recently, a clerk came running to the chief with a letter of inquiry about a plant which the writer referred to as *Vagnera racemosa*. All the dictionaries had been searched,—Durand, Lindley, Kewensis, Nicholson, Paxton, Johnson, and others on the shelves, but no *Vagnera* was in the list. Believing it might be one of the newest of the new old names, Britton and Brown's *Illustrated Flora* was taken up, and sure enough it was found to be our old friend *Smilacina racemosa*, the common, wild Solomon's Seal. It so happens that in the earlier days of the excitement for primitive names, some half dozen years ago, Prof. Britton, himself, started to reform *Smilacina racemosa*, and told us we must in future speak of it as *Unifolium recemosum*. We have scarcely had time to go over our herbariums and scratch out the old name, and re-write *Unifolium* for *Smilacina*, before the same good author tells us we must go over the work again and scratch out *Unifolium* for *Vagnera*. Why should we honor this Vagner at such a serious cost. Who is Vagner, at any rate? The *Illustrated Flora* tells us it was "named in honor of Wagner," and this is all! It is poor honor when ones name is not correctly spelled! But who was this Wagner anyhow? The French Botanist, Michel Adanson, used the name *Vagnera*, in *Familles des Plantes*, in 1763, and with this date for a starting point, probably J. J. Wagner, who wrote on the natural history of Switzerland, was intended, and fully deserves, as a Swiss, to have the full W to his name.

We must appeal to our good friends, Britton and Brown, to help us in these nursery troubles. All we can do in the meantime is to vatch for this vickedness, and raise our woice wigorously against it.

GARDEN PRIVILEGES ABUSED.—It is to be regretted that the desire of owners of beautiful gardens to share their pleasures with others less fortunate than themselves is so often obstructed by a few boorish people, who do not know how to behave. The great majority of those so favored conduct themselves properly, but the few rude ones spoil the whole. The New York correspondent of the Philadelphia *Public Ledger* reports the following. The unfortunate facts find a counterpart everywhere: "The reckless riding of wheelmen through the grounds of wealthy gentlemen residing on the banks of the Hudson River has resulted in the taking away of that privilege. Quite recently John Jacob Astor was crowded into the ditch on his own estate by a party of rough riders, and at once he shut the gates of Ferncliffe to all wheelmen. Fred W. Vanderbilt has now followed Mr. Astor's example, on account, it is said, of a similar experience. The Astor and Vanderbilt places contain miles of the best roads in Dutchess County."

UNIVERSITY OF CALIFORNIA.—The fire in the Agricultural Experiment Station of the University of California, at Berkeley, was unfortunate in many respects, as well as involving a money loss of some $45,000. The collections and data, covering some twenty-one years of effort, went with it.

FLORAL CALENDARS.—A difficulty in constructing floral calendars arises from the fact that the seasons operate differently on different flowers. Lilacs are usually in bloom before apples,—but this season apple blossom time was in advance of the lilacs. Similar results with other flowers are of common experience.

SITUATIONS WANTED

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENERS:—We shall be glad to furnish names of competent gardeners adapted to large or small places. Gardeners wishing situations should correspond with us. THOMAS MEEHAN & SONS, Nurserymen, Germantown, Philadelphia.

GARDENER with first-class references, has charge now at a gentleman's place of 25 acres-lawn, 6 acres vegetables gardens, 12 greenhouses, 28 years' experience in Europe and this country, wants to change his place. "A. Z." Office, MEEHANS' MONTHLY.

GARDENER.—Situation wanted by a young man thoroughly experienced in all branches. Married, no children. excellent references. Address E. G., Box 366, Mamaroneck, New York.

GARDENER, desires situation on a private place. Life experience in every branch of horticulture and landscaping. Married, children all grown. Unexcelled references. Thomas H. Geraghty, Newport, R. I.

GARDENER.—Young German desires private place. Married, no children. Thorough experience in every department of gardening as well as landscaping. Good references. John T. Fischer, West Conshohocken, Penna.

FENCING.—It is really worth while sending for "The Coiled Spring Hustler" issued by The Page Woven Wire Fence Co., Adrian, Mich., as it contains so much real information about fences. The company sends it free to all askers, but be sure and mention MEEHANS' MONTHLY.

The Great French Strawberry

LOUIS GAUTHIER

Only large fruiting kind which bears on new runners. Old plant fruits in June, making runners which fruit in September. Write to

A. T. GOLDSBOROUGH, West Washington, D. C.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of **Rare and Beautiful California Novelties. Many New Begonias, New Cosmos, Rare Cacti, etc.** Offered by no others.

Ventura-by-the-Sea, Cal.

VARIEGATED FUNKIA

FOR IMMEDIATE PLANTING.

The ordinary, large green-leaved Day Lilies, with their graceful spikes of lilac or whitish blue flowers, are well-known to all who possess grass plots large enough to admit of a few ornamental plants; but the variegated sorts are not so frequently seen, and they remain practically unknown to the average home gardener. There is a deep contrast between the dark green and white of the striped leaves, forming an equal contrast with the green grass of a lawn. It also makes a good border or edging for walks or beds, the leaves lying closer than the large green form. We offer fine pot grown plants at 15c. each; $1.25 per 10 or $10.00 per 100. From pots, these may be planted out at any time.

Our grounds are always open to visitors, and we invite inspection of our stock especially during the summer, when the plants are in leaf and bloom, feeling sure that the visitor would be well pleased with the stock. Address or call on

THOMAS MEEHAN & SONS

NURSERYMEN and LANDSCAPE ENGINEERS

Upper Church and Chew Sts.

Telephone 9411 A. **Germantown, Phila., Pa.**

"CACTUS GUIDE"

Published Monthly

Devoted to the culture of . . . **Cacti and Succulents**

Subscription price 50c. a year

SAMPLE COPY FREE

Cactus Guide, Sharon, Pa.

C. G. Van Tubergen, Jr., Haarlem, Holland

CHOICE DUTCH BULBS

AND ATTRACTIVE BULBOUS PLANTS

CATALOGUES FREE

C. C. ABEL & CO., Sole Agents, Box 920, New York

The Rose: Its Cultivation, Varieties, etc.

BY H. B. ELLWANGER

Directions for cultivation, for planting, pruning, propagation, the treatment of diseases and insect enemies, particularly valuable for its classification, alphabetical and descriptive list of nine hundred and fifty-six varieties. Cloth, 16vo. Price, **$1.25.**

THOMAS MEEHAN & SONS, Germantown, Pa.

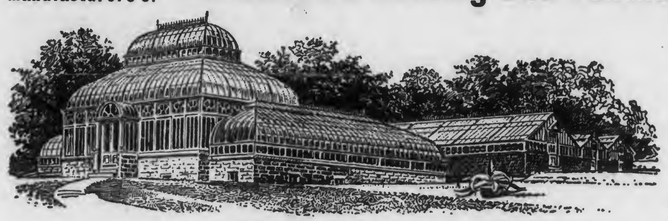
WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS. L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

VOL. X. NO. 463.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

JANUARY 6, 1897.

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

ARMSTRONG & MCKELVY
BEST LEADMAKE
DAVIS-CHAMBERS
FAHNESTOCK
ANCHOR
ECKSTEIN
ATLANTIC
BRADLEY
BROOKLYN
JEWETT
ULSTER
UNION
COOPER'S
GRIDLEY
COLLIER
MISSOURI
RED SEAL
SOUTHERN
JOHN T. LEWIS & BROS CO
MORLEY
SALEM
CORNELL
KENTUCKY

Pittsburgh.
Dilworth, Porter & Co.
Cleveland.
New York.
Chicago.
St. Louis.
Philadelphia.
Cleveland.
Salem, Mass.
Buffalo.
Louisville.

THERE is a right way to paint and a wrong way. The right way is to have the best paint—Pure White Lead (see list of genuine brands) and Linseed Oil—applied by a practical painter. The wrong way is to get some mixture about which you know nothing and apply it yourself or have some inexperienced, irresponsible person do it.

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information and card showing samples of colors, and also cards showing pictures of twelve houses of different designs painted in various styles, and combinations of shades forwarded upon application.

National Lead Co., 1 Broadway, New York.

ASK YOUR SEED DEALER FOR

SLUG-SHOT

TO DESTROY

Currant and Cabbage Worms, Potato Bugs, Cucumber Fleas, Rose Lice and Slugs, Lice on Cattle, Fowls, etc.

Trade Mark

SLUG SHOT stands today the most successful general insecticide in the world for use on VEGETABLES, PLANTS OR FLOWERS. It is put up in various sized packages to suit all wants. We prepare all sorts of INSECTICIDES and FUNGICIDES for spraying or in powder. GRAPE DUST—Powder for destroying Mildew on Roses and Gooseberries. If you have trouble with Insects or Blights, write and we will try to help you. Send a postal for pamphlet to A. HAMMOND, Fishkill-on-Hudson, N. Y.

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for 25c.

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., - - - Boston.

Park and Cemetery.

An illustrated monthly for the advancement of Art out of doors. Practical articles of permanent value by competent authorities on subjects of special interest to **Commissioners, Trustees** and **Superintendents** of **Parks** and **Cemeteries**, and those interested in **Tree Planting** and **Town and Village Improvements**. Plans of Parks or Cemeteries, and their architectural and landscape features, illustrated every month. Subscription $1.00 a year. R. J. HAIGHT, Publisher, 334 Dearborn Street, Chicago.

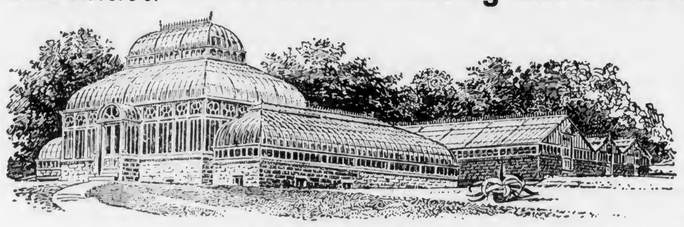
WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS. L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

VOL. X. NO. 463.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*

"Wise, intelligent, entertaining."—*Harper's Weekly.*

"Rich variety of remarkable engravings."—*N. Y. Post.*

"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*

"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

ARMSTRONG & McKELVY Pittsburgh.
BEYER-BAUMAN Pittsburgh.
DAVIS-CHAMBERS Pittsburgh.
FAHNESTOCK Pittsburgh.
ANCHOR, ECKSTEIN } Cincinnati.
ATLANTIC, BRADLEY, BROOKLYN, JEWETT, ULSTER, UNION } New York.
SOUTHERN, SHIPMAN } Chicago.
COLLIER, MISSOURI, RED SEAL, SOUTHERN } St. Louis.
JOHN T. LEWIS & BROS CO Philadelphia.
MORLEY Cleveland.
SALEM Salem, Mass.
CORNELL Buffalo.
KENTUCKY Louisville.

THERE is a right way to paint and a wrong way. The right way is to have the best paint—Pure White Lead (see list of genuine brands) and Linseed Oil—applied by a practical painter. The wrong way is to get some mixture about which you know nothing and apply it yourself or have some inexperienced, irresponsible person do it.

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information and card showing samples of colors free; also cards showing pictures of twelve houses of different designs painted in various styles or combinations of shades forwarded upon application.

National Lead Co., 1 Broadway, New York.

HAMMOND'S SLUG-SHOT — I SLAY BUGS — 1880 1897 — INSECTICIDE & FUNGICIDE

Trade Mark

ASK YOUR SEED DEALER FOR

SLUG-SHOT

TO DESTROY

Currant and Cabbage Worms, Potato Bugs, Cucumber Fleas, Rose Lice and Slugs, Lice on Cattle, Fowls, etc.

SLUG SHOT stands to-day the most successful general insecticide in the world for use on VEGETABLES, FRUITS OR FLOWERS. It is put up in various sized packages to suit all wants. We prepare all sorts of INSECTICIDES and FUNGICIDES for spraying or in powder. GRAPE DUST—Powder for destroying Mildew on Roses and Gooseberries. If you have trouble with Insects or Blights, write and we will try to help you. Send a postal for pamphlet to **B. HAMMOND, Fishkill-on-Hudson, N. Y.**

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for **25c.**

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., - - - Boston.

Park and Cemetery.

An illustrated monthly for the advancement of Art out of doors Practical articles of permanent value by competent authorities on subjects of special interest to **Commissioners, Trustees** and **Superintendents** of **Parks** and **Cemeteries,** and those interested in **Tree Planting** and **Town** and **Village Improvements.** Plans of Parks or Cemeteries, and their architectural and landscape features, illustrated every month. Subscription $1.00 a year. **R. J. HAIGHT, Publisher, 334 Dearborn Street, Chicago.**

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

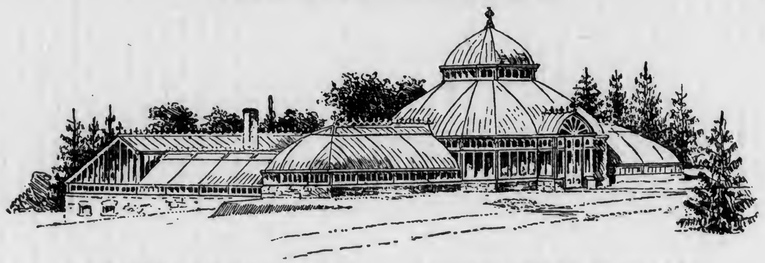
INTENTIONAL SECOND EXPOSURE

LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS

STEAM AND HOT WATER HEATING ENGINEERS

Plans and Estimates furnished on application



Largest Builders of Greenhouse Structures. **Six Highest Awards at the World's Fair**

Send four cents postage for illustrated catalogue

LORD & BURNHAM CO.

ARCHITECTURAL OFFICE, 160 FIFTH AVE., COR. 21st STREET, NEW YORK.

Factory: Irvington-on-Hudson, New York

Mention Paper

Landscape Engineering

Plans prepared and carefully carried out for Grading, Roadmaking, Planting and the Remodeling of old places ∴ Special arrangements made when extensive work is contemplated ∴ Correspondence solicited.

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers — GERMANTOWN, PHILADELPHIA

EDWARD CAMPBELL

LANDSCAPE ARCHITECT AND ENGINEER

ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. **Fine Crushed Stone for Walks and Carriage Drives.**

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS. **The finest general assortment of Hardy Ornamental Plants in America.** Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.

THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

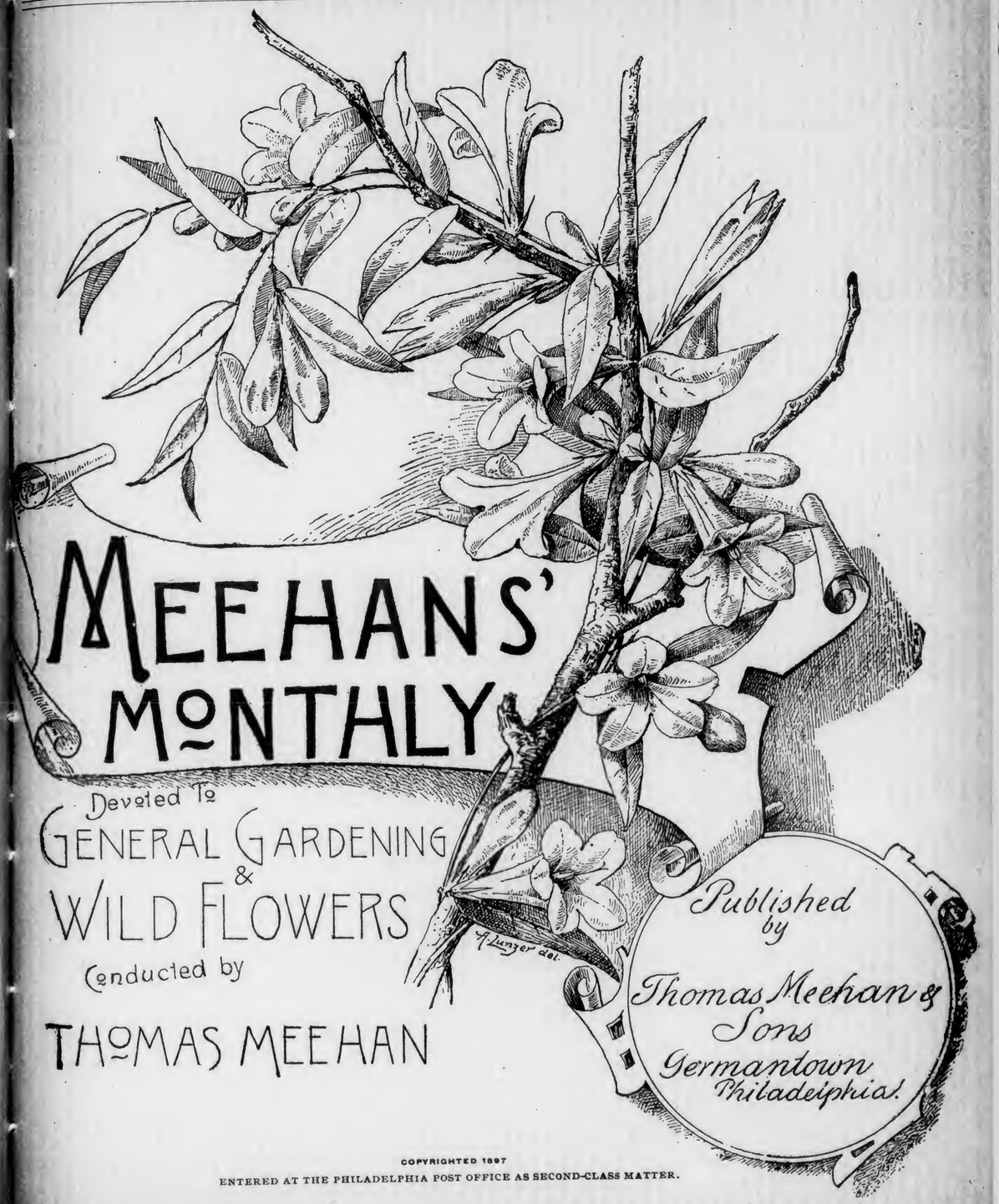
We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without putty. Latest methods of Ventilation, Steam and Hot-Water Heating. Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. ☞ Don't fail to get our Plans and Prices.

PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

WHEN WRITING TO ADVERTISERS, PLEASE MENTION MEEHANS' MONTHLY.

VOL. VII — AUGUST, 1897 — No. 8

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

Meehans' Monthly

PUBLISHED MONTHLY BY

THOMAS MEEHAN & SONS,
Germantown, Phila.

Subscription Price $2.00 per year.

$1.00 for Six Months. Back Numbers 20 cts. Each.
Two Subscriptions for $3.50 per Year.

ADVERTISING RATES ON APPLICATION

Forms close on the 20th of each Month, preceding date of issue. - -

Address all Correspondence relating both to Editorial and Advertising matter, to

THOMAS MEEHAN & SONS, Publishers
Germantown, Phila., Pa.

A material has been discovered for glazing which after thorough test has been proven far superior to putty, it is called

MASTICA.

Mastica is easier to apply and when once put on it stays. It is not affected by extremes of weather, and is thus especially adapted for greenhouses, conservatories, graperies, hotbeds, etc. Endorsed by prominent florists throughout the country.

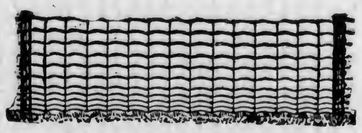
Send for descriptive circular of **Mastica and Mastica Glazing Machines.**

F. O. PIERCE CO.,
SOLE MANUFACTURERS
170 FULTON STREET, NEW YORK

GRIFFITH TURNER & CO., 205 N Paca St., Baltimore Md.
EDWARD S. SCHMID, 712 12th St., N.W., Washington, D.C.
HENRY A. DREER, 714 Chestnut St., Phila., Pa.
HENRY F. MICHELL, 1018 Market St., Phila., Pa.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.
WM. WARNER HARPER, PROPRIETOR



A Fence Not Made By Hand.

The average farmer can not afford to indulge in hand made fence, nor hand painted pictures. Even if he does the work himself, a "botch" and a "daub" will likely be the result, while the **time** consumed, if properly applied in his regular business, would provide means for beautiful photographs, engravings, etc., and lots of the "old, reliable" Page fence.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

NOVELTIES IN PLANTS, FRUITS, ETC.
A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

DREER'S MID-SUMMER LIST
Fully describes all the best new and old
Pot-Grown **Strawberry Plants**
CELERY, CABBAGE, Etc., Etc.
FREE ON APPLICATION.
Henry A. Dreer, Philadelphia

WALKER'S
EXCELSIOR FERTILIZER
AN ODORLESS, SOLUBLE PLANT FOOD
CONTAINS NO ACIDS OR COLORING MATTER

We will furnish a treatise on "Care of House Plants" and enough plant food for 25 plants for six months for 25 cents, post-paid, and enough for 25 plants for twelve months for 40 cents, post-paid.

We also manufacture an **Odorless Lawn Dressing** and **Fertilizers for Farm Crops.** Write us.

THE WALKER FERTILIZER CO.
CLIFTON SPRINGS, N. Y.

Daphne cneorum

A most beautiful dwarf plant, bearing fragrant pink flowers. Largely used for edging Rhododendron or Shrubbery beds. Strong plants from pots. These can be set out now.

Hardy Herbaceous Plants

We have a very large collection of the most desirable sorts in pots. They can be planted out now and become well established before winter sets in. Herbaceous beds designed and planted. Prices on application.

Thomas Meehan & Sons
Nurserymen and Landscape Engineers
Germantown, Philadelphia

EVANS' IMPROVED
CHALLENGE VENTILATING APPARATUS
Write for Illustrated Catalogue.
QUAKER CITY MACHINE WORKS
Richmond, Ind.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

PENTSTEMON BARBATUS.

BEARDED PENTSTEMON.

NATURAL ORDER SCROPHULARIACEÆ.

PENTSTEMON BARBATUS, Nuttall.—Usually tall, two to six feet high; leaves lanceolate, or the upper ones linear-lanceolate; the lowest oblong or ovate; sepals ovate; corolla strongly bilabiate, an inch long, from light pink-red to carmine; base of the lower lip or throat usually bearded with long and loose or sparse yellowish hairs. Coulter's *Manual of Rocky Mountain Botany*. See also Gray's *Synopsis of the Flora of North America*,—and Wood's *Class-Book of Botany*.

The early history of this beautiful plant is lost in obscurity. English works usually say "Native of Mexico. Introduced by Sir Joseph Banks in 1794." Philip Miller, whose very complete "Dictionary" issued in 1807, makes no mention of it, though he was familiar with *Pentstemon campanulatus* supposed also to be from Mexico, and which, he says, was then cultivated in the gardens of Madrid and Paris. How Sir Joseph Banks obtained it from Mexico, is not stated. DeCandolle, in addition to quoting "Mexico," adds "near Oaxaco." This has been confirmed by the later researches of Ghiesbrecht.

It seems scarcely credible that a plant native of so low a latitude as 23° south of Vera Cruz should be able to endure the severest cold of our northern winters. In our country it is found in Colorado, Utah, and Arizona. Few perennial plants can be found extending from this northern point to so far South, and the geographical area is marvelous. It was figured by Cavanilles in the third volume of his "Icones," just about the time it is said to have been introduced into England by Sir Joseph Banks. Many Mexican seeds grew in the Madrid Botanic Garden, from which plants Cavanilles made many of his drawings. The fact is one of considerable biological interest. The home of the Pentstemon family is in Southern Colorado and Utah. When plants travel and become fixed residents of a warmer climate, they are expected to lose a portion of their former hardiness. This Mexican plant is, however, just as hardy as if fresh from Southern Colorado.

The plant is very variable in other characteristics if not in hardiness. If any one can compare the picture given in the *Botanical Register* of 1818 with the beautiful illustration which accompanies this chapter, he might be forgiven for regarding them as of two different species. The short, broad flowers of a brownish red contrast poorly with the more slender flowers, of a beautiful scarlet, which are represented here. The root-leaf is represented as some eight inches in length, and very veiny, instead of glossy and leathery as figured in our plate. But the most striking difference is in the floral leaves, which in the picture cited are reduced to bracts not a quarter of an inch in length, while in our plate they continue as true leaves almost to the end of the growth of the panicle. In what we must regard as its true home, the variations are also remarkable, so much so that a number of species have been made which Dr. Gray in his "Synoptical Flora" regards as mere variations. Of these are what had been formerly known as *Pentstemon Torreyi*, *P. puberulus*, *P. trichander*, *P. labrosus*, and *P. Wislizini*, which latter, by the way, is found as far south as Chihuahua.

In the early part of this century the plant was described as *Chelone barbata*,—the distinction between this genus and *Pentstemon* being the smooth pseudo-stamen of the former as against the hairy one of *Pentstemon*. This was found not a decided difference, and the two would probably have been united for all the different aspect of those now known as *Chelone*, only for the later discovery that the seeds of *Chelone* had a membranous wing which is wanting in the true *Pentstemon*. Nuttall, in his "Genera" published in 1818, seems to be the first to give this membranaceous condition of the seeds of *Chelone* as one of generic character, and remarks in parenthesis "(*C. barbata* is a *Pentstemon*, and therefore an exception to the artificial character.)" On this casual remark it has become customary to quote "*Pentstemon barbatus*, Nuttall."

The specimen illustrated has been cut into

COLOR PLATE

PENTSTEMON BARBATUS.

BEARDED PENTSTEMON.

NATURAL ORDER SCROPHULARIACEÆ.

PENTSTEMON BARBATUS, Nuttall.—Usually tall, two to six feet high; leaves lanceolate, or the upper ones linear-lanceolate; the lowest oblong or ovate; sepals ovate; corolla strongly bilabiate, an inch long, from light pink-red to carmine; base of the lower lip or throat usually bearded with long and loose or sparse yellowish hairs. Coulter's *Manual of Rocky Mountain Botany*. See also Gray's *Synopsis of the Flora of North America*,—and Wood's *Class Book of Botany*.

The early history of this beautiful plant is lost in obscurity. English works usually say "Native of Mexico. Introduced by Sir Joseph Banks in 1794." Philip Miller, whose very complete "Dictionary" issued in 1807, makes no mention of it, though he was familiar with *Pentstemon campanulatus* supposed also to be from Mexico, and which, he says, was then cultivated in the gardens of Madrid and Paris. How Sir Joseph Banks obtained it from Mexico, is not stated. DeCandolle, in addition to quoting "Mexico," adds "near Oaxaco." This has been confirmed by the later researches of Ghiesbrecht.

It seems scarcely credible that a plant native of so low a latitude as 23° south of Vera Cruz should be able to endure the severest cold of our northern winters. In our country it is found in Colorado, Utah, and Arizona. Few perennial plants can be found extending from this northern point to so far South, and the geographical area is marvelous. It was figured by Cavanilles in the third volume of his "Icones," just about the time it is said to have been introduced into England by Sir Joseph Banks. Many Mexican seeds grew in the Madrid Botanic Garden, from which plants Cavanilles made many of his drawings. The fact is one of considerable biological interest. The home of the Pentstemon family is in Southern Colorado and Utah. When plants travel and become fixed residents of a warmer climate, they are expected to lose a portion of their former hardiness. This Mexican plant is, however, just as hardy as if fresh from Southern Colorado.

The plant is very variable in other characteristics if not in hardiness. If any one can compare the picture given in the *Botanical Register* of 1818 with the beautiful illustration which accompanies this chapter, he might be forgiven for regarding them as of two different species. The short, broad flowers of a brownish red contrast poorly with the more slender flowers, of a beautiful scarlet, which are represented here. The root-leaf is represented as some eight inches in length, and very veiny, instead of glossy and leathery as figured in our plate. But the most striking difference is in the floral leaves, which in the picture cited are reduced to bracts not a quarter of an inch in length, while in our plate they continue as true leaves almost to the end of the growth of the panicle. In what we must regard as its true home, the variations are also remarkable, so much so that a number of species have been made which Dr. Gray in his "Synoptical Flora" regards as mere variations. Of these are what had been formerly known as *Pentstemon Torreyi*, *P. puberulus*, *P. trichander*, *P. labrosus*, and *P. Wislizini*, which latter, by the way, is found as far south as Chihuahua.

In the early part of this century the plant was described as *Chelone barbata*,—the distinction between this genus and *Pentstemon* being the smooth pseudo-stamen of the former as against the hairy one of *Pentstemon*. This was found not a decided difference, and the two would probably have been united for all the different aspect of those now known as *Chelone*, only for the later discovery that the seeds of *Chelone* had a membranous wing which is wanting in the true *Pentstemon*. Nuttall, in his "Genera" published in 1818, seems to be the first to give this membranaceous condition of the seeds of *Chelone* as one of generic character, and remarks in parenthesis "(*C. barbata* is a *Pentstemon*, and therefore an exception to the artificial character.)" On this casual remark it has become customary to quote "*Pentstemon barbatus*, Nuttall."

The specimen illustrated has been cut into

COLOR PLATE
INTENTIONAL SECOND FIL

sections, so as to show the whole plant,—and is the form originally described as *Pentstemon Torreyi*. It is from a cultivated plant, the stock having been long in Philadelphia gardens, and was probably introduced from seed obtained during the exploration of the Mexican Boundary. It is described, in the Botany of the Boundary, as being very frequent in the mountains of New Mexico.

Though it is a common thought that all flowers are beautiful, some are more nearly types of perfect beauty than others. In *Pentstemon barbatus*, a treatise on the Science of Beauty might well use it as an apt illustration. "Those plants" says Bastian "are deemed beautiful, the symmetry of whose compacted parts, the felicity of whose distinct members, and whose adaptation to their method of life and local surroundings are clearly discerned." In this *Pentstemon* there is nothing overwrought or under-wrought. The main stem is strong and vigorous, but does not impress us as being coarse. The common peduncle and pedicels are singularly slender and graceful, and yet wholly sufficient to sustain the flower. The flower is irregular, yet the various parts run off from each other so gradually and gracefully as to add to rather than narrow the expression of fitness, which under the term felicity Bastian describes the leading element of beauty. The color though rich is not glaring, and the regularly graded green leaves mix in among the flowers as if forming a happy family, undisposed to part company, and living together in unison and harmony rarely seen to such perfection in floral life. Our artist has here caught the happy thought which nature herself has thrown out, and in the grouping of the sections of the stem has united strength and gracefulness in a manner not to be excelled.

Besides the æsthetic lesson, lovers of the study of final causes will find in the fifth stamen a matter to dwell upon. *Pentstemon* has been the name imposed on the genus from the existence of a fifth stamen, while its congeners have usually but four. But this fifth stamen is barren, and of no direct benefit to the plant itself, so far as any one can see.

Indeed, very much of what we have been taught in connection with the life-history of flowers is coming to be regarded as only true sometimes. They seem to be exceptions to the rule rather than to be the rules themselves. That plants have assumed their various forms in order to better fit themselves for a struggle with their surroundings, once a generally accepted law, is now to be received with much allowance. The fifth stamen in our plant is not only useless, but the plant would not get along any better if this organ were perfect. A curious paper on this subject appears in the Proceedings of the Academy of Natural Sciences of Philadelphia for April 1897.

The flowers of this *Pentstemon* in common with others of the genus are bent downwards on the peduncle. But sometimes flowers will be found that are not on curving peduncles, but continue in a perfectly straight line. They are in fact erect instead of decumbent. In these cases the flower loses its two-lipped character, with the lower segments recurved and pressed against the tube, while the upper segment is upright, and somewhat arching over other parts of the flower,—and it becomes a five-parted flower, the lobes of the corolla being all equal with one another. The most wonderful occurrence is, however, in the change of this fifth stamen, from which the genus derives its name, into a perfect one,—the exact counterpart of the other four. No one would recognize the flower as belonging to a *Pentstemon*, nor indeed as a member of the *Scrophulariaceous* order. It is in fact an absolutely new creation, induced certainly by no conditions of environment, nor of any necessary deviation for advantage in a life struggle; but solely because of some failure in the curving power, the flower-stalk remained erect. The observation has been extended. Other species of plants with curved peduncles have irregular flowers. But occasionally the peduncles do not curve and the flower is regular. We learn the great lesson that in some way not yet manifest, an irregular flower is the result of a curved peduncle, evidently dependent on the degree of force in the spiral growth, and with which external agencies have little to do.

It is lessons like these which in these times give a charm to the study of our wild flowers, unlike the studies of former times. Plants were first drawn to us by their use only.

EXPLANATION OF THE PLATE.—1. A whole plant in sections, believed to be originally from New Mexico or Western Texas 2. A full face view of a flower showing the position of the lip and anthers.

WILD FLOWERS AND NATURE.

A SUMMER MORN.

Morn breaketh in the east. The purple clouds
Are putting on their gold and violet,
To look the meeter for the sun's bright coming.
Sleep is upon the waters and the wind;
And Nature, from the wavy forest-leaf
To her majestic master, sleeps. As yet
There is no mist upon the deep blue sky,
And the clear dew is on the blushing bosoms
Of crimson roses in a holy rest.

—N. P. WILLIS.

DOUBLE FLOWERS.—Nature first, shows a desire to form a double flower. The florist encourages the desire. Double field buttercups are not uncommon.

YOUNG POTATOES WITHIN OLD ONES.—Young and small potatoes are occasionally found in the interior of old ones, and always attract the attention of the curious as well as of the students of structural botany. Recently a specimen fell in the way of the Superintendent of the Friends' Select School in Philadelphia, and was sent to Dr. Ida A. Keller, one of the Professors in the Girls' High School, whose eminence in vegetable morphology is well-known. There seemed to be no doubt but that the young potatoes originated in the centre of the old one, which had parted at the apex to let the young ones escape.

Two of her bright young graduates, interested in scientific studies, Miss Eleanor R. Nungesser, of Sybertsville, Luzerne Co., Pa., and Miss Lillian M. Myers, of Doylestown, in the same State, took them to the Academy of Natural Sciences of Philadelphia, as positive evidence that old potatoes can and do form young ones at times from the interior. The professor in charge of the herbarium assured the ladies that there could be no possibility under recognized morphological laws by which it was possible for the old potato to bring forth these young ones. An orange might be produced within an orange, a grape within a grape, but the potato, which was simply a thickened branch, could not do so. There could be no explanation, he insisted, other than that an ordinary potato runner or stolon had penetrated the old potato, and the little tubers had formed at the ends inside the old potato as they would do in the ground, and this he insisted on for all there was not the slightest evidence of penetration visible. But on dissection, it was found that he was right. The engraving of a longitudinal section of the potato which is here illustrated shows the course of the runner.

Prominent attention is given to the matter here to show that Nature rarely, if ever, makes any exception to her regular way of doing things. Matters that seem mysterious, are easily explainable by a little care to get at the exact facts,—and again attention is given to it to show that morphology, a branch of botanical science founded wholly on theoretical conceptions, is so sound in its fundamental principles as to be a safe guide in the examination of casual phenomena.

POTATO TUBERS INSIDE AN OLD ONE.

MORE ABOUT THE SWALLOWS.—My swallows of your March number keep sailing on over this broad land and bring greetings from far and near, after asking from where they started at first,—that is, which church I meant? It was the St. Georgen Church in Parchim, Grand duchy of Mechlenburg Schwerin.

And as the birds take such an important part in all our creations of nature in general, and gardens, parks and woodlands in particular, I must speak something more of them. The book of Heinrich Nehrling, "The Native Birds of North America," first issued in German language, has made great furore in the Old World. It is, part of it, now issued in English and appeals as a master work of its kind to all lovers of our birds. Could our feathered friends be more protected, that is, could the people more realize how much we owe them, it would result in many ways to our benefit? But the wanton slaughter seems to go on uninterrupted when there are so many ways of making an excuse for the use of their little lives. Women, too, are the worst offenders in this line, for the sake of parading with their bright-colored plumage, dressed up in it and strutting around for show. The real pleasure of out-door life is work in the garden. See and learn to know the wild flowers of the field and forest, yet only partly understood. But the influence of such leading journals as MEEHANS' breaks slowly a path to the enjoyment of Nature's bounteous resources. May it find a place at least in every school house of the land. MRS. WILHELMINE SELIGER.

Hartford, Conn.

Although much has been written about the swallow, every letter additional brings some new fact of interest of which the reader will not tire. Life in a garden is not made up of floral enjoyment alone. Birds add largely to the pleasures of gardening, as indeed do every department of animal life. Notes on these subjects are always welcome.

PLEASURE IN GOLDEN RODS. SOLIDAGO SEMPERVIRENS AND S. TENUIFOLIA.—In MEEHANS' MONTHLY for November, 1896, an article briefly called attention to the numerous kinds of golden-rods found in the vicinity of Philadelphia, describing them superficially. Reference is made to the article at this time believing many would be interested in making actual comparisons of the respective species this coming fall. The earliest to bloom, mentioned in the article, produced its flowers in the vicinity of Philadelphia in September. Should ones be found earlier by any of our readers, MEEHANS' MONTHLY would be glad to record them with other points of interest. Especially could additional species be described. Being a common and easily-found flower, this opportunity is unusually great for pleasant communion with Nature.

Two interesting species were found abundantly at Atlantic City, New Jersey, last fall,—*Solidago tenuifolia* and *S. sempervirens*. The former differs but little from *lanceolata*, but the difference of localities will be a chief deciding point. Another is that the stems of *lanceolata* are hairy, while those of *tenuifolia* are smooth; the leaves of the latter are slightly narrower, and the flowering period longer. *S. sempervirens* is remarkable for the length of its leaves, they measuring 10 to 12 inches in length; they are thick—almost succulent, and sub-clasping. It is a stout grower throughout, forming large panicles of bright golden flowers. The specimens seen were about 4 feet in height, but they are said to reach 6 feet in a good situation.

On July first *Canadensis* was seen 5 feet 5 inches in height, and showing prospects of much further growth. This is a good height, encouraged by cultivation, to which it gladly adapts itself.

ACCIDENT TO FISHES.—We all know how terrestrial creatures are killed by falling from heights to the ground, yet it is not generally known that fishes are killed from falling also; but they fall in a different direction. They tumble from the bottom of the sea upwardly. A large number of fish require heavy pressure in order to maintain life, and when they come near the surface, where the pressure is light, they die. When, therefore, a fish loses its power to maintain itself at the proper depth in the ocean, and commences to fall to the surface, the result is precisely the same as in the land animal falling downwards; yet it seems strange to say, that when a fish under these circumstances comes to the surface it is falling upwards, but this is a literal fact. To be sure it does not crush in falling as terrestrial creatures do. This is the only difference.

A SCENE ON THE WISSAHICKON.—An art critic once said that he could not say the valley of the Wissahickon Creek was beautiful,—but he would say it was the prettiest he had seen in America. Leaving this nice distinction to the lover of æsthetics, one may safely say that no one ever gazed on the scenery without thoroughly enjoying it. The valley is part of the city of Philadelphia, but is preserved from the axe of modern improvements by having been attached to Fairmount Park, which has one of its leading drives along its banks.

The picture annexed illustrates a portion of the drive. The waters of the creek are far down at the base of a sloping bank on the right of the picture,—and accidents are guarded against by a cedar fence, made as rustically as possible, so as to be in harmony with wild Nature. The *Kalmia*, or Wood Laurel, is seen forming the undergrowth which clothes the bank; while the larger Red Maple trees make beauty for the spring, cool shade for the summer, and give glory by their brilliant foliage to the autumn season of the year. The rocky bank, which rises many feet, on the left of the picture, is covered with Hemlock Spruce trees, fringed at the base with the Wood Laurel, profusely interspersed with the wil flowers for which the valley is famed. This is the character of the picture here presented; but the chief fame of the drive rests on the never-ending variety. Nearly every curve introduces us to new features, demanding profuse admiration.

A SCENE ON THE WISSAHICKON.

THE SPIRAL HABIT OF FIR TREES.—The *Farmers' Review*, of Chicago, observes that the firs and larches that make their homes in the Alpine regions are admirably fitted, by their erect main stems and pendent branches, to growth in these snowy places. If they branched in the manner of the trees of lower regions, they would be unable to weather the storms. The weight of snow, now easily sliding off, would crush them. It is a pretty thought, and probably wholly original.

IOWA'S STATE FLOWER.—The Legislature of Iowa has, by formal Act of the Assembly, adopted the Prairie Rose as the State flower. In former times, the rose was the emblem of rival factions in civil war; let us hope the present selection will signify peace and good will.

MORE ABOUT THE SWALLOWS.—My swallows of your March number keep sailing on over this broad land and bring greetings from far and near, after asking from where they started at first,—that is, which church I meant? It was the St. Georgen Church in Parchim, Grand duchy of Mechlenburg Schwerin.

And as the birds take such an important part in all our creations of nature in general, and gardens, parks and woodlands in particular, I must speak something more of them. The book of Heinrich Nehrling, "The Native Birds of North America," first issued in German language, has made great furore in the Old World. It is, part of it, now issued in English and appeals as a master work of its kind to all lovers of our birds. Could our feathered friends be more protected, that is, could the people more realize how much we owe them, it would result in many ways to our benefit? But the wanton slaughter seems to go on uninterrupted when there are so many ways of making an excuse for the use of their little lives. Women, too, are the worst offenders in this line, for the sake of parading with their bright-colored plumage, dressed up in it and strutting around for show. The real pleasure of out-door life is work in the garden. See and learn to know the wild flowers of the field and forest, yet only partly understood. But the influence of such leading journals as MEEHANS' breaks slowly a path to the enjoyment of Nature's bounteous resources. May it find a place at least in every school house of the land. MRS. WILHELMINE SELIGER.

Hartford, Conn.

Although much has been written about the swallow, every letter additional brings some new fact of interest of which the reader will not tire. Life in a garden is not made up of floral enjoyment alone. Birds add largely to the pleasures of gardening, as indeed do every department of animal life. Notes on these subjects are always welcome.

PLEASURE IN GOLDEN RODS. SOLIDAGO SEMPERVIRENS AND S. TENUIFOLIA.—In MEEHANS' MONTHLY for November, 1896, an article briefly called attention to the numerous kinds of golden-rods found in the vicinity of Philadelphia, describing them superficially. Reference is made to the article at this time believing many would be interested in making actual comparisons of the respective species this coming fall. The earliest to bloom, mentioned in the article, produced its flowers in the vicinity of Philadelphia in September. Should ones be found earlier by any of our readers, MEEHANS' MONTHLY would be glad to record them with other points of interest. Especially could additional species be described. Being a common and easily-found flower, this opportunity is unusually great for pleasant communion with Nature.

Two interesting species were found abundantly at Atlantic City, New Jersey, last fall,—*Solidago tenuifolia* and *S. sempervirens*. The former differs but little from *lanceolata*, but the difference of localities will be a chief deciding point. Another is that the stems of *lanceolata* are hairy, while those of *tenuifolia* are smooth; the leaves of the latter are slightly narrower, and the flowering period longer. *S. sempervirens* is remarkable for the length of its leaves, they measuring 10 to 12 inches in length; they are thick—almost succulent, and sub-clasping. It is a stout grower throughout, forming large panicles of bright golden flowers. The specimens seen were about 4 feet in height, but they are said to reach 6 feet in a good situation.

On July first *Canadensis* was seen 5 feet 5 inches in height, and showing prospects of much further growth. This is a good height, encouraged by cultivation, to which it gladly adapts itself.

ACCIDENT TO FISHES.—We all know how terrestrial creatures are killed by falling from heights to the ground, yet it is not generally known that fishes are killed from falling also; but they fall in a different direction. They tumble from the bottom of the sea upwardly. A large number of fish require heavy pressure in order to maintain life, and when they come near the surface, where the pressure is light, they die. When, therefore, a fish loses its power to maintain itself at the proper depth in the ocean, and commences to fall to the surface, the result is precisely the same as in the land animal falling downwards; yet it seems strange to say, that when a fish under these circumstances comes to the surface it is falling upwards, but this is a literal fact. To be sure it does not crush in falling as terrestrial creatures do. This is the only difference.

A SCENE ON THE WISSAHICKON.—An art critic once said that he could not say the valley of the Wissahickon Creek was beautiful,—but he would say it was the prettiest he had seen in America. Leaving this nice distinction to the lover of æsthetics, one may safely say that no one ever gazed on the scenery without thoroughly enjoying it. The valley is part of the city of Philadelphia, but is preserved from the axe of modern improvements by having been attached to Fairmount Park, which has one of its leading drives along its banks.

The picture annexed illustrates a portion of the drive. The waters of the creek are far down at the base of a sloping bank on the right of the picture,—and accidents are guarded against by a cedar fence, made as rustically as possible, so as to be in harmony with wild Nature. The *Kalmia*, or Wood Laurel, is seen forming the undergrowth which clothes the bank; while the larger Red Maple trees make beauty for the spring, cool shade for the summer, and give glory by their brilliant foliage to the autumn season of the year. The rocky bank, which rises many feet, on the left of the picture, is covered with Hemlock Spruce trees, fringed at the base with the Wood Laurel, profusely interspersed with the wil flowers for which the valley is famed. This is the character of the picture here presented; but the chief fame of the drive rests on the never-ending variety. Nearly every curve introduces us to new features, demanding profuse admiration.

A SCENE ON THE WISSAHICKON.

THE SPIRAL HABIT OF FIR TREES.—The *Farmers' Review*, of Chicago, observes that the firs and larches that make their homes in the Alpine regions are admirably fitted, by their erect main stems and pendent branches, to growth in these snowy places. If they branched in the manner of the trees of lower regions, they would be unable to weather the storms. The weight of snow, now easily sliding off, would crush them. It is a pretty thought, and probably wholly original.

IOWA'S STATE FLOWER.—The Legislature of Iowa has, by formal Act of the Assembly, adopted the Prairie Rose as the State flower. In former times, the rose was the emblem of rival factions in civil war; let us hope the present selection will signify peace and good will.

INTENTIONAL SECOND EXPOSURE

AMONG THE CLOUDS.—I cannot say "botanizing among the clouds" with Prof. Saunders, as in his very interesting and instructive article in MEEHANS' MONTHLY for May. Nevertheless, I am among, and often far above the clouds, which assume fantastic shapes and fade away into mists and vapor. Our town is 9,500 feet above sea level and Synan Mountain, which rises bold, rocky and sublime 10,000 feet. In a niche of this wonderful mountain, whose bowels are seamed with gold, is our home. Surely we are founded upon a rock. There is scarcely soil enough to be perceptible in many places. Yet here, and clear to the topmost round of this rock-ribbed mountain, great fir trees abound, their roots finding the cracks and crevices in the rocks and penetrating far and wide for nourishment. It is one of the wonders of this wonderful country how they live and thrive. People tell me, who have lived here some time, that the profusion of wild flowers among these rocks and mountains is something wonderful. We have had no warm weather as yet,—snow and hail nearly every day, and it appears to me that my wild flower friends will be lazy in showing their beauties. Did any of the readers of MEEHANS' MONTHLY ever live or see a place where there was not a fruit tree; no gardens; no yards, no lawns, nothing but rocks, with some evergreen trees on the mountains? Just mines, great mining shafts in every direction bringing up from the depths the precious mineral—gold? There is a magnificent beauty about it all, but not the restful loveliness of eastern homes and country. One meets people from all lands looking for the hidden treasures in these mountains.

MRS. FREDERICK C. JOHNSON.

Victor, Colorado.

A GRAFT-HYBRID.—Whether hybrids may be produced by grafting, has long been a mooted question. Most of the instances adduced in the affirmative have been questioned, on account of similar results having occurred as mere sports, where grafting was out of the question; or in some other way the evidence was not of that direct character which scientific deduction demands. Even the case of Adam's Broom, *Cytisus Adami*, which is considered the strongest case in favor of the proposition, is weakened by the fact that similar cases in other plants occur as sports only. The following, from the *Weiner Garten Zeitung*, appears to satisfy some of the doubting ones, that a real graft-hybrid has at length been secured:

"The well-known firm of MM. H. Vilmorin-Andrieux & Co., are distributing a variety of potato which deserves attention from the gardening world, not only for its high cultural value, but also as being the product of grafting the variety Imperator on the early Ashleaf (Marjolin of the French.) This is certainly the first instance of a hybrid having been obtained in this manner, which combines the peculiar good properties of the stock and the scion. The tubers are of middle size, round in shape, and keep in good condition for a considerable period. The flesh is yellow, firm, mealy when cooked, and of good flavor. It is an early ripening, very prolific potato, with but little haulm. The raiser is M. Lefort, of strawberry fame."

MATERNAL LOVE IN ANIMALS.—All creatures seem to some extent to need something to love. Within the writer's recent experience, a hen had defaulted in hatching a crop of eggs. In a space near the hen's nest, a cat gave birth to a set of kittens. When some days old, and when the mother cat was on a foraging expedition, the hen took a notion to go and sit over the kittens in the cat's nest. Regularly, for a few days, the cat would return at stated times to suckle the kittens, but succeeded only each time after a struggle with the hen. The hen would try to teach the young to pick up food as young chickens would,—but, failing in the lessons, would gather them under her wings again.

After a few days, the cat got tired of the contest, and left the kittens wholly to the care of the hen, the result being that in a few days the poor little things starved to death.

When we used to read in Roman history, that its two founders, Romulus and Remus, were babies abandoned by their parents, and then taken in hand and suckled by a she-wolf, the boys were apt to exclaim "how ridiculous." As they grow older, with wider experience, the question then is, how much of a ridiculous story may be safely believed? Whether the Roman story is true or not, where there is smoke there may be fire.

INFERTILITY OF HYBRIDS.—Mr. G. H. Wilkinson, San Antonio, Texas, says:

"Will you kindly give, through the columns of MEEHANS' MONTHLY, your views on the reproductive power of hybrids?"

That the product of the horse and the ass is the sterile mule is such a prominent fact makes it extremely difficult to satisfy scientific people that it is exceptional. Evidence as to the exceptional character of sterility in the hybrid mule has been continually placed on record,—but botanical magazines of high character are continually repeating the oft-refuted story, that such-and-such a plant is undoubtedly a hybrid, because it is sterile! We have only to look to the immense number of fertile varieties in the garden Fuchsia—originally produced through the very dissimilar species *F. fulgens* and *F. longiflora*;—to the wonderful forms of *Streptocarpus*, originally a hybrid between two very distinct genera;—to the fertile hybrids between numerous gesneraceous genera, and to the very notable number of fertile hybrids between the genera and species of orchids, in order to see how baseless is the sterile-hybrid notion. But as long as the sterile animal, the mule, thrusts its ears in front of us, the notion will continue to have admirers.

DWARF WILD ROSE.—Peduncles, one flowered. Prickles not all straight, not few. Leaflets three to five, narrow, serrate above the middle, pale beneath, glossy dark green above.

GARDEN OF JAMES W. ELWELL, ESQ., BROOKLYN, N. Y.—SEE PAGE 149.

Two bracts beneath the bristly urn-shaped calyx and bracted lobes. Stipules narrow, stems one to three feet tall. Corolla of five petals, two-and-a-quarter inches diameter. The apex of the limb dark pink, approaching purple, shading off to whitish pink at center. The ring of the many stamens very prominent, and nearly erect. The flower strongly perfumed. The leaves when bruised emitting the rose odor. Found on dry hills; common. Time of blooming, May and June. To many people, a double rose is the most beautiful of

AMONG THE CLOUDS.—I cannot say "botanizing among the clouds" with Prof. Saunders, as in his very interesting and instructive article in MEEHANS' MONTHLY for May. Nevertheless, I am among, and often far above the clouds, which assume fantastic shapes and fade away into mists and vapor. Our town is 9,500 feet above sea level and Synan Mountain, which rises bold, rocky and sublime 10,000 feet. In a niche of this wonderful mountain, whose bowels are seamed with gold, is our home. Surely we are founded upon a rock. There is scarcely soil enough to be perceptible in many places. Yet here, and clear to the topmost round of this rock-ribbed mountain, great fir trees abound, their roots finding the cracks and crevices in the rocks and penetrating far and wide for nourishment. It is one of the wonders of this wonderful country how they live and thrive. People tell me, who have lived here some time, that the profusion of wild flowers among these rocks and mountains is something wonderful. We have had no warm weather as yet,—snow and hail nearly every day, and it appears to me that my wild flower friends will be lazy in showing their beauties. Did any of the readers of MEEHANS' MONTHLY ever live or see a place where there was not a fruit tree ; no gardens ; no yards, no lawns, nothing but rocks, with some evergreen trees on the mountains? Just mines, great mining shafts in every direction bringing up from the depths the precious mineral—gold ? There is a magnificent beauty about it all, but not the restful loveliness of eastern homes and country. One meets people from all lands looking for the hidden treasures in these mountains.

MRS. FREDERICK C. JOHNSON.
Victor, Colorado.

A GRAFT-HYBRID.—Whether hybrids may be produced by grafting, has long been a mooted question. Most of the instances adduced in the affirmative have been questioned, on account of similar results having occurred as mere sports, where grafting was out of the question ; or in some other way the evidence was not of that direct character which scientific deduction demands. Even the case of Adam's Broom, *Cytisus Adami*, which is considered the strongest case in favor of the proposition, is weakened by the fact that similar cases in other plants occur as sports only. The following, from the *Weiner Garten Zeitung*, appears to satisfy some of the doubting ones, that a real graft-hybrid has at length been secured :

"The well-known firm of MM. H. Vilmorin-Andrieux & Co., are distributing a variety of potato which deserves attention from the gardening world, not only for its high cultural value, but also as being the product of grafting the variety Imperator on the early Ashleaf (Marjolin of the French.) This is certainly the first instance of a hybrid having been obtained in this manner, which combines the peculiar good properties of the stock and the scion. The tubers are of middle size, round in shape, and keep in good condition for a considerable period. The flesh is yellow, firm, mealy when cooked, and of good flavor. It is an early ripening, very prolific potato, with but little haulm. The raiser is M. Lefort, of strawberry fame."

MATERNAL LOVE IN ANIMALS.—All creatures seem to some extent to need something to love. Within the writer's recent experience, a hen had defaulted in hatching a crop of eggs. In a space near the hen's nest, a cat gave birth to a set of kittens. When some days old, and when the mother cat was on a foraging expedition, the hen took a notion to go and sit over the kittens in the cat's nest. Regularly, for a few days, the cat would return at stated times to suckle the kittens, but succeeded only each time after a struggle with the hen. The hen would try to teach the young to pick up food as young chickens would,—but, failing in the lessons, would gather them under her wings again.

After a few days, the cat got tired of the contest, and left the kittens wholly to the care of the hen, the result being that in a few days the poor little things starved to death.

When we used to read in Roman history, that its two founders, Romulus and Remus, were babies abandoned by their parents, and then taken in hand and suckled by a she-wolf, the boys were apt to exclaim "how ridiculous." As they grow older, with wider experience, the question then is, how much of a ridiculous story may be safely believed? Whether the Roman story is true or not, where there is smoke there may be fire.

INFERTILITY OF HYBRIDS.—Mr. G. H. Wilkinson, San Antonio, Texas, says :

"Will you kindly give, through the columns of MEEHANS' MONTHLY, your views on the reproductive power of hybrids?"

That the product of the horse and the ass is the sterile mule is such a prominent fact makes it extremely difficult to satisfy scientific people that it is exceptional. Evidence as to the exceptional character of sterility in the hybrid mule has been continually placed on record,—but botanical magazines of high character are continually repeating the oft-refuted story, that such-and-such a plant is undoubtedly a hybrid, because it is sterile ! We have only to look to the immense number of fertile varieties in the garden Fuchsia—originally produced through the very dissimilar species *F. fulgens* and *F. longiflora* ;—to the wonderful forms of *Streptocarpus*, originally a hybrid between two very distinct genera ;—to the fertile hybrids between numerous gesneraceous genera, and to the very notable number of fertile hybrids between the genera and species of orchids, in order to see how baseless is the sterile-hybrid notion. But as long as the sterile animal, the mule, thrusts its ears in front of us, the notion will continue to have admirers.

DWARF WILD ROSE.—Peduncles, one flowered. Prickles not all straight, not few. Leaflets three to five, narrow, serrate above the middle, pale beneath, glossy dark green above.

GARDEN OF JAMES W. ELWELL, ESQ., BROOKLYN, N. Y.—SEE PAGE 149.

Two bracts beneath the bristly urn-shaped calyx and bracted lobes. Stipules narrow, stems one to three feet tall. Corolla of five petals, two-and-a-quarter inches diameter. The apex of the limb dark pink, approaching purple, shading off to whitish pink at center. The ring of the many stamens very prominent, and nearly erect. The flower strongly perfumed. The leaves when bruised emitting the rose odor. Found on dry hills ; common. Time of blooming, May and June. To many people, a double rose is the most beautiful of

INTENTIONAL SECOND EXPOSURE

all roses. I may have thought the same if I had never seen this single rose. There is such a thing as too much of a good thing. The double roses are getting that way. *Rosa rugosa*, I understand, is a single rose, and has become fashionable because of its singleness of purpose in producing large, handsome, round, red hips. The rose under consideration has the same characteristics, in a measure, a single blossom to the peduncle and a single round, red hip as an ornament when its blooming days are over,—and besides, it does not grow too tall nor too straggling, but begins to bloom when a foot high, and makes a clean, compact bush. As I have given no specific name to this plant, it is because Dr. Gray's descriptions are too vague, and I here ask Mr. Meehan for its distinguishing name.

F. K. STEELE.

Festus, Mo.

The rose is probably *Rosa humilis*.

SUGAR ORCHARDS IN NEW ENGLAND.—Mr. Newlin Williams tells *The Forester* that one of the most pleasing sights a tourist meets with during a summer in Northern New England is a great grove of the beautiful round-topped Sugar Maples growing on the sunny slope of some mountain. If the tree growth be not so dense as to hide it he may see the "sugar-house" in the lowest part of the orchard, sometimes with simple wooden troughs running toward it down the slopes from different parts of the orchard, the troughs being used to empty the sap at a point near the place of collection, the declivity allowing it to run to the sugar-house by gravity and to be collected in the storing vessels.

To walk through one of these "bushes" in the cool mountain air is a keen delight to a lowlander, for the summer carpets the barren ground with masses of sweet-scented fern wherever the sun gets a chance to shine through the dense leafage; and the finely cut fronds, curved with a peculiar fragile delicacy, surround the granite boulders which lie in gray silence under the deep green of the trees.

LIGHTNING AND TREES.—The predilection by lightning for trees of a certain species has often been noticed.

It has been stated that the danger to trees from lightning depends not only on their height but also on their conductibility, resulting from more or less richness of sap. Amongst curious observations concerning the subject are those made by M. Vockert, which seem to prove that trees with hairy or ciliated leaves are,—all conditions equal however,—less exposed to lightning than trees with smooth leaves. For example, the beech tree would be less exposed to lightning than the oak, because its leaves are pubescent and ciliated, and the character of its numerous bristles would oppose production of strong electric power in the tree, the electricity gliding from the numerous points in proportion as it is produced during the storm.

This explanation has elsewhere received experimental confirmation, because it has been ascertained that a beech tree leaf attached to an electric conductor diminishes the tension of the latter in less time than that used by an oak leaf under the same conditions.

Translated from La Semaine Horticole.

S. D. LANNING.

GROWTH-FORCE.—The growth-force of trees is something astounding. Roots have been known to overthrow stone walls by their continuous growth. In rocky woods, one may frequently see trees growing in the clefts of rocks; and, although the cleft may have been but a few inches wide when the tree started into life, so great has been its growth-force, that, in maturity, the rock has been pushed apart as widely as the width of the trunk itself.

Trees have been known to mislead surveyors. Everyone knows that a tree-trunk, once formed, never grows longer; and yet, survey marks made on trees have been known to be considerably higher when the tree grew older, than when first made. In these instances, the trees have been growing on flat rocks, and, by the increased thickening of the roots, these huge trunks have been lifted by the pressure of the roots upon the rock.

THE ASCENT OF WATER IN TREES.—Mr. Francis Darwin contends that the teaching of our text books, in regard to the method by which Nature causes water to ascend in trees, is baseless. No theory that can command general approval has been offered so far. Plants draw water from dry ground at times.

GENERAL GARDENING.

AN ITALIAN MYRTLE.

——————— a myrtle, fairer than
E'er grew in Paphos, from the bitter weeds
Lifts its sweet head into the air, and feeds
A silent space with ever-sprouting green.
All tenderest birds there find a pleasant screen,
Creep through the shade with noisy fluttering,
Nibble the little cupped flowers, and sing.
—KEATS.

GARDEN OF JAMES W. ELWELL, ESQ., BROOKLYN, N. Y.—Early in the present century, the famous Dutch or artificial style of gardening fell into disfavor. The natural style found a home in the hearts of the people. More recently, Mosaic flower beds came into vogue, such as is represented by a scene given herewith on page 147. Of late this system is being attacked, and we are advised to discard it, and go back to the purely natural again.

We are all too apt to draw conclusions from partial views of any subject. Hence, arguments of the character noted may be partly defective and partly sound. The object of a garden is human enjoyment. A piece of ground may be so arranged by one eminent in landscape gardening as to be pronounced a perfect work of natural beauty—but it would be appreciated only by the few who had learned to understand in what the beauty of art consisted. We need the best pictures of George Washington the painter can produce; but to the million, the picture of George Washington on a tavern sign would be superior to a picture by the most eminent artist. But we must not abolish the Washingtons on these roadside ventures on that account; nor must we ignore the capacity of the popular mind for the enjoyments which artificial gardening affords.

After all, it may be a question whether the Mosaic style of gardening is out of place in an illustration of true art in its highest development. Admitting the arrangement in this picture, with its beds of echeverias, and euphorbias and opuntias for sentinels, and alternantheras for carpeting cannot be seen in a beautiful picture of wild nature—so neither can the smoothly mown lawn, the neatly graveled walk, nor the squarely-cut building. The beds are rather in harmony with the surroundings, and violate no principles in the science of beauty.

At any rate, we know that the votes of our readers will all be in favor of admiring the picture here given, which represents a scene in the garden of Mr. J. N. Elwell, of Brooklyn, N. Y.

RAISING ORCHIDS FROM SEEDS.—*La Semaine Horticole* says:—"Apropos of our letter published in our number of May 1st, under the heading of Correspondence from Portugal, three subscribers have written that they have always seen orchid seeds perish when covered, and that they would advise no one to cover Cypripedium seeds or seeds of other species unless it might be with a little fibrous earth or other such material.

We must say that this is exactly our advice. We have often seen seeds germinate in various ways,—on roots of living plants, on the edge of the pot, and even on the labels stuck in the ground; but we have never seen the seeds sprout from the ground, and up to this time there is no rule sufficiently verified for the reproduction of orchids from seeds.

There is, however, one rule which is generally admitted, which is, that very small seeds must be sown on the surface of the soil or ground. Sometimes it happens that orchid seeds are sown on an irregular surface, and some of the seeds fall in little crevices, or at the side or on blocks. We have more than once seen seeds germinate under these conditions; but we have never seen them push from beneath moss or fibre of polypody; it is generally understood that for sowing it is necessary to select pots with the moss short and the surface level, because when it is long and the seeds fall underneath, they are lost. Sometime before sowing, the long blades of moss are cut with a pair of scissors, to keep it short and even.

SIDE-WALK TREES FOR CALIFORNIA. —Dr. F. Franceschi names the following as suitable side-walk trees for Central California :

Cordyline indivisa, *Washingtonia filifera*, *Dracæna Draco*, any of the trunk-making Palms,—of the deciduous kinds he notes *Albizzia Julibrissim*.

Celtis sinensis, Chinese hackberry, with dense dark foliage and reddish berries, a beautiful row of them to be seen on Main Street, in Los Angeles, between 12th and 13th.

Gingko biloba or *Salisburia adiantifolia*, the Japanese Maidenhair tree ; magnificent avenues of them in the Royal Park of Monza in Italy.

Liriodendron tulipifera, the tulip tree of our Southeastern States, will thrive only in deep moist soil.

Pircunia dioica, the ombu of the Pampas, of wonderful rapid growth, much planted along sea-side plazas and alamedas in Southern Spain.

This *Pircunia dioica*, by the way is more properly *Phytolacca dioica* and closely related to the common Poke-berry of the Atlantic States. It will be a surprize to those acquainted only with the latter, an herbaceous plant, to know that one of the species is used as a shade tree in California. Of some other street trees he observes.

Pittosporum undulatum and *P. rhombifolium*, the first with pure white exquisitely scented flowers in winter and early spring, the second literally covered with golden yellow berries all winter : other Pittosporums are likely to do well as sidewalk trees : same may be said of different kinds of Myoporums.

Schinus terebinthifolius from Brazil, which in Algeria and Tunis has proved to be preferable to *Schinus Molle*, the common Pepper Tree, for having a better habit of branching, and richer foliage.

CLEARING LAWNS OF PERNICIOUS WEEDS.—There are few things more disheartening to the lovers of beautiful lawns than the persistency with which some weeds dispute possession of the ground with the grass. One friend, who has suffered a great deal from Chick-weed and similar low and creeping things, has tried to overcome them by sowing more vigorous kinds of grass among them, but failed to find one method effective. He is now about to try the method advocated and so successfully practised by Mr. Olcott, of South Manchester, Conn. He proposes to make a small plantation on his ground of certain vigorous species or varieties of grasses which he has found to thrive well under different conditions, There will be one adapted to shade,—another to sun-light ; one to moist ground and others to dryer ground ; and these he proposes to plant thickly, according to the requisite conditions, in the spaces made bare by the weeds. Seeds have no chance, as the young plants are killed out in their early stages ; but to start with strong, vigorous roots of grass, as our friend proposes to do, may tend to greater success.

CONSERVATORY PLANTS GROWING TOO TALL. —Indian Rubber, yuccas, dracænas, tree ferns and other conservatory plants, prized frequently for their associations or other matters of interest connected with them, often get too tall for their quarters, and yet the owners would not under any circumstance part with them were it possible. To shorten these, a rough platform may be erected around the stems, and boxes of earth placed around the trunks at the point from which one would like to have roots proceed. Before placing the earth boxes finally around, longitudinal incisions should be made in the stems, which will help to facilitate the production of roots. If kept well watered, in most cases there will be a mass of roots in the box of earth within twelve months, when the part can be cut away and treated as an ordinary small plant.

STREET TREE PRUNING.—Dr. Tyson, Philadelphia, calls attention to the painful sight of fine street trees in that city being decapitated by the ignorant tree butchers, who make a living by this execrable work during the winter. The trees are reduced to trunks with a few score of huge stumps several feet long, in the place where the former beautiful branches grew. Much of the trouble comes from the ignorance of the original planter in selecting unfit trees. The Silver Maple and Canadian Poplar (miscalled Carolina Poplar) are utterly unfitted for street trees. They grow rapidly, and are for this reason very useful for ten or fifteen years. But they grow too tall soon after, and the owner easily falls into the views of the tree butcher to give him a job in beheading them.

HARDY CYCLAMENS.—Few who admire the beautiful Persian Cyclamen of our greenhouses know that there are two hardy species well worthy of cultivation in our gardens, *Cyclamen Europæum* and *Cyclamen hederæfolium*. In Europe, the former is very abundant in the woods of some localities, and is the favorite food of hogs, from which it has received the popular name of Sowbread in those countries. It appears from the following, which is condensed from *Lyon-Horticole*, that the other species serves a useful purpose in France, where it is known as the Cyclamen d'Aix.

"Advice is given to the horticulturists of Aix-les-Bains concerning the culture of the Cyclamen d'Aix. *Cyclamen hederæfolium* is gathered in the mountains by the poor, who take it to the florists' shops, where bunches as large as violet boquets are sold for thirty or forty centimes. It is very scarce and not easily found. It is said to be used largely in the Parfum au Cyclamen d'Aix, but it really plays a very vague and light part in it. The advice, therefore, is that the Ivy-leaved Cyclamen be cultivated and substituted—still a fraud—in the place of the European Cyclamen, *Cyclamen Europæum* which grows poorly in the gardens. The Ivy-leaved Cyclamen often gives more than fifty flowers per plant, and needs to be planted only once."

The illustration shows that it is a pretty plant, aside from its economic recommendations.

The cyclamen of our gardens is the Persian species, *C. Persicum*.

CYCLAMEN HEDERÆFOLIUM.

LADIES IN THE FLORIST BUSINESS.—Our English horticultural exchanges are full of compliments because of a lady in London having become a successful florist. She seems to have obtained a good trade by reason of a nice discrimination in buying up rare and beautiful flowers which are not common in the trade. Her establishment is, therefore, patronized by a class of customers who are willing to give good prices for flowers which are not usually found in the wares offered by other florists. What seems interesting to us in America is that this lady, Mrs. Maxwell, is presented to us as a remarkably exceptional case of the success of a woman in the business. This would not be surprising to us, for, in almost every large city of our continent, one may point to ladies who are wholly successful as florists.

PROPAGATING BEGONIAS.—Begonias may be divided into three different classes, — those with tuberous roots, those with somewhat of a herbaceous stalk, and those which have a shrubby character. The shrubby ones are easily propagated by slips or cuttings taken at any season of the year. It seems to make no difference with this class of Begonia whether the shoots taken for propagation are spring grown or mature wood. The herbaceous kinds usually have large thick leaves, and in most cases will send out buds from the leaf veins. It is usual to plant a leaf,—that is to say, the leaf stalk is inserted in the ground up to the leaf blade. This leaf blade is then pegged down flat on the surface of the ground, so as to be continually pressed firmly and tightly against the earth. The principal veins are then cut across, segments about one inch apart, and in the course of time young buds will proceed from each section. Some kinds send out young plants from the divided portions easier than other kinds; but nearly all can be propagated in this way, with more or less time allowed them for the purpose.

ROSA RUGOSA FOR HEDGES.—The London *Journal of Horticulture* notes that the *Rosa rugosa* makes one of the most beautiful of live fences or hedges. It refers to one in existence on the grounds of the eminent nurserymen of Reading, of that country, the Suttons, who have portions of their nurseries divided by a hedge, of this rose, which is 40 feet long and 4 feet high. It is spoken of as being, for seven months in the year, a mantle of beautiful foliage, and, although useful as a hedge plant, it will permit of immense numbers of flowers being cut for indoor decoration. It seeds very freely. The large, scarlet hips (as the fruit of the rose is called) form a grand ornament in the fall.

CALLICARPA PURPUREA.—A Tennessee correspondent inquires whether the *Callicarpa purpurea* of Japan is not identical with the *Callicarpa* which renders the woods of the Southern States so attractive by its violet-colored berries in the autumn of the year. It is not quite the same, although similar. The common one is known, botanically, as the *Callicarpa Americana*. It has not received the attention of the landscape gardener to the extent it merits. The habit of the plant is not quite so pleasing as that of its Japanese relative. It makes a larger and more striking bush, and has other points of merit.

USEFUL INSECTS.—Bees and butterflies are usually considered to be the insects which favor the pollenization of flowers; but one who raises peaches under glass considers that flies are just as useful. At any rate, with a number of flies in his peach-house, a correspondent writes that his trees were just as fruitful as though honey-bees had visited them. People generally would prefer no peaches to flies.

MAGNOLIA GLAUCA.—The tree represented on page 155, stands on the estate of the late David U. Morgan, near Collingswood, New Jersey. The trunk is 42–5 inches in circumference and over thirty feet in height. When with a camera we came near, what I had imagined a mass of foliage, flowers and fragrance, a sudden sadness came over us as we beheld the nearly naked branches. There had been no hail storm, or cyclone, but some boards for scaffolding and the ground covered with branches and foliage told of the work of the flower and fruit fiends. Your valued journal recently, with words of Whittier's "Benevolent Gardener," told us of the blessings to:

> "Him who strives to leave as his bequest,
> An added beauty to the earth."

And what woes should come to him, from both "God and man," who destroys the trees and flowers with which the Lord has clothed his earth? The marauders pick the buds before they are half grown, and none are left to form fruit. The birds are robbed, the natural plan of distribution and planting seeds is obstructed, and if the destroyers are not educated out of their thieving ways, more of our beautiful plants and flowers will be exterminated, as has already been done to the *Nelumbium luteum*, *Nymphæa odorata* and *Sarracenia purpurea*. We have long labored for the parking and planting of our streets and highways, that the pools and marshes along them might send forth beautiful rays and pleasant odors in stead of malaria. The most general objection of property owners is that marauders would despoil the improvements.

We insist that it is our duty to check the thieving propensities. Stealing flowers leads to stealing fruit, robbing hen-roosts and other crimes. In some Mahomedan countries, the people have a religious reverence for wild animals and birds as gifts of the Creator, and may not an active Christian civilization teach respect and love for all the gifts of God?

The *Magnolia glauca* is easily propagated by seeds or sprouts, and will grow on dryer ground than is generally supposed. The writer has planted them along the road gutter on the farm front and on the back line; and in the front yard at Cooper and Seventh Streets, Camden, is one planted years ago which blooms annually, and all are doing well. R. BINGHAM.

Mechanicsville, New Jersey.

NEW OR RARE PLANTS.

SMILAX LANCEOLATA.—Mr. John Fraser, Montgomery, Ala., remarks:

"Are you acquainted with *Smilax lanceolata?* It is our favorite porch-shader. Dr. Mohr says it is hardy south of New York. I enclose a spray. The foliage stays on the plant for years. No litter.

BULBOUS VIOLETS.—We shall soon have violets classed among Dutch bulbs for planting in autumn. A beautiful species, with bulbs of considerable size, has been introduced into England from the East Indies. It is called *Viola bulbosa*. The color is white, with the lower petals striped with purple, and is said to be very pretty. Our own *Viola cucullata* has thick and succulent root stocks, and the production of a tuberous variety is not therefore an extreme illustration of nature's power.

A HARDY EVERGREEN, *Osmanthus aquifolium*.—Considering the dearth of broad-leaved evergreens and the general demand for them here, it must be that the reason the *Osmanthus aquifolium* is not more planted is because its availability is not known. This beautiful shrub is a native of Japan, and has been in cultivation many years, but is rarely seen as a hardy shrub, a position it is well equipped to fill. Just how far north it will thrive I do not know, but in this vicinity, Philadelphia, it is entirely hardy, and I have seen it thriving at Glen Cove, L. I., and, no doubt, in sheltered places it would prosper further north than that. It is closely allied to the evergreen holly, resembling the English more than our native one, *opaca*. But the leaf of the English is curly and spiney, the curly character making it present arms at all points, while the leaf of the *Osmanthus*, though armed, does not curl.

I may add that the English holly is fairly hardy in this vicinity. JOSEPH MEEHAN.

STRIPED BUTTERCUPS.—The *Lyon Horticole* notes that considerable attention is being given to the production of striped flowers. Many new introductions of this class have become at once popular. The cut below represents a striped Persian Ranunculus.

THE JAPAN LACQUER TREE.—The jet black color of much Japan ware is well-known and universally admired. The lacquer itself is the juice of a tree very closely related to our Poison Ash, *Rhus venenata*. How they

A STRIPED RANUNCULUS.

manage to collect it without being poisoned, is a question which many Americans would ask, for the American ally of the Lacquer Tree is one of the worst of the Poison Vine or Tree family. If poisoning from this tree can be avoided, lacquer can be made as well from the American as from the Japanese species. Some experiments have been made which show the juice has exactly the same properties. In Japan, the juice is simply collected by making incisions in the bark, and collecting it in vessels, attached to the tree, which are made in the form of spoons, the juice then passing through a bamboo tube into another vessel.

STRIPED ROSES.—Roses with striped petals have appeared from time to time, and are popular; but they have a fashion of losing the stripe, after awhile, and becoming self-colored. But a race has been introduced, in the Old World, which seems to have its individual members have the stripes in what the ladies call fast colors. *La Semaine Horticole* thus describes some of these novelties.

"Panachée de Bordeaux and Coquette Bordelaise. These superb roses were obtained by accidental dimorphism from the rose Madame Georges Desse, a variation of Paul Neyron. They were introduced by M. C. D. Duprat, and have foliage dimensions and the appearance identical with Paul Neyron, only being more vigorous. The color of Panachée de Bordeaux is a bright pink, streaked by a velvety red and white. Coquette Bordelaise is a bright carmine pink, bearing a spot in the center of its petals like some Camellia flowers.

THE HARDY FLOWER GARDEN.

DOUBLE PÆONIES.— Mr. T. C. Thurlow, Newburyport, Mass., sends a box of flowers of double pæonies, the culture of which he makes a specialty, and for which he receives many awards of merit. It is not too much to say they were the handsomest we ever saw. The pæony will ever be a popular border flower.

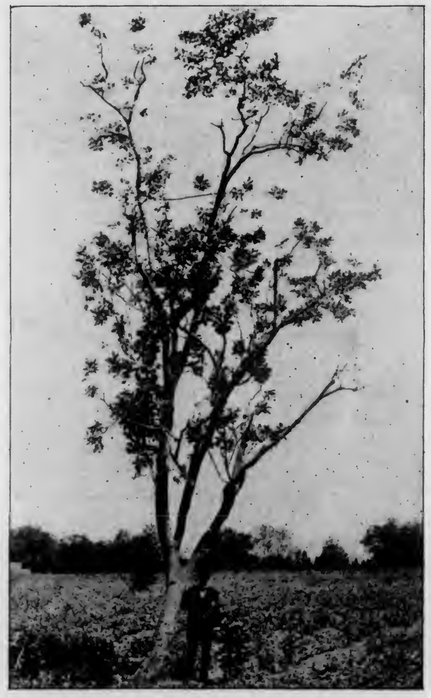
ORIGANUM VULGARE.—It is principally the collection seeker or botanist who is familiar with that pleasant, unassuming plant, *Origanum vulgare*. Why it should be overlooked so generally by planters is a mystery, unless it be that considerable of the selections are made from catalogues, where but little to describe clearly its charms could be said, for it must be seen to be appreciated. Although a native of Europe, it has been long naturalized in this country. The writer once found it in the low hills of the Adirondacks, along a woodland roadside; but no inference should be drawn from the mention of woodlands that shade is necessary, for it does well in a sunny and comparatively dry portion of the garden. It is closely related to our common garden thyme, which fact can be readily surmised because of the aromatic odor produced from a bruised leaf of the *Origanum*, or marjoram as it is commonly known. The spikes of flowers are produced in July, in panicled corymbs, continuing through August. These and the bracts are purple, the former opening almost white, producing an excellent combination. The individual flowers being small it is desirable that they be massed to get full benefit from the color. Spreading with moderate rapidity, clumps are soon formed of dense foliage and a mass of flowers. It is not a plant to be recommended for brightening up a garden, as it is not brilliantly showy, but it would certainly be appreciated where an assortment is desired. It grows about two feet in height.

RENOVATING HERBACEOUS BEDS.—Many plants have such a tendency to increase by suckering from the roots and forming dense mats or clumps, that the soil is often overtaxed to supply sufficient nourishment. In most cases it is best to dig up the beds, divide and replant them, selecting the younger and healthy divisions. The writer has in mind, in this connection, instances of beds of *Achillea Millefolium rubrum*, *Aster tataricus*, *Helianthus Maximiliani*, *Helianthus mollis*. In some cases of the larger growing kinds it was found satisfactory to hoe out the plants in 10 to 12-inch paths through the bed, early in the summer. This relieves the plants, and the growth generally will fill out in a short time, so that the mass effect will be undisturbed.

The *Sempervivum*, or house-leek, is a frequent example of this over-crowding. Each mature plant produces several offsetts on comparatively short stems each season. As these offsets mature and develop their offsets, all parts being thick and fleshy, there is but one

natural consequence. Resetting of these may be done at any time, using large or small shoots. Although having little root, the succulent leaves and stems make the transplanting perfectly sure. Thinning them out will, in most cases, answer as well as taking up the bed.

TRANSPLANTING PÆONIES.—Unlike many herbaceous plants, undisturbed pæonies improve with age. In older gardens, immense bunches are frequently seen, a mass of foliage and liberally dotted with huge heads of flowers. Notwithstanding the pleasure afforded by large clumps, it may occasionally be found desirable to transplant and divide them. While it can be done in perfect safety to the plants either in fall or spring, the former is preferable by causing less disturbances to spring growth. It has been found advantageous to divide them as early as possible, it being merely necessary that the growth should have accomplished its purpose for that season, at which time it is really waiting for destructive frost to do what we will in this case do—cut it off. To divide them, use a heavy knife or cleaver, leaving "eyes" to each division. In the vicinity of Philadelphia, this work may be usually performed in early September. They will thrive in almost any ordinary garden soil, yet to have them at their best, plant them in a rich loam, low enough to receive full benefit of rains. A liberal top-dressing of manure from which the straw has not been closely shaken, placed in the fall, gives food for strong growth besides retaining moisture and keeping the roots cool during the summer—a very delight to a pæony.



A MAGNOLIA GLAUCA VANDALIZED.--SEE PAGE 152.

FRUITS AND VEGETABLES.

INFLUENCE OF GRAFTS ON THE STOCK.—From time to time, the question arises, as if it had never been settled, as to whether there is any particular influence of the graft on the stock on which it is worked. That there is some influence, is well known. Nurserymen, in digging up rows of apple trees of different varieties, can certainly see the difference in the roots of each variety, and this difference can only be accounted for by the graft which has been worked on this root, and the explanation is plain. It is not that there is any particular change in the character of the roots; but that the character of the foliage affects the vital power. The roots of trees depend for their vigor on the amount of foliage borne on the tree. A tree which has healthy, vigorous foliage has also healthy, vigorous roots. On the other hand, a weak-growing variety that has comparatively few leaves will make weak centre roots. The difference in the vigor, of course, makes the difference in the appearance. In so far, the graft does make the difference; in other respects, it does not. A quince root is still a quince root, although a pear or apple may be grafted on it. Such difference as may arise from a difference in vigor, is all that can be achieved. In digging pears, a nurseryman can almost tell, by the roots alone, that the Kieffer had been grafted on it. It is such an extraordinary vigorous grower that the extra vigor is communicated to the stock.

Soil communications in plants, as in human nature, corrupt good manners, but do not originate or have otherwise to do with them.

manage to collect it without being poisoned, is a question which many Americans would ask, for the American ally of the Lacquer Tree is one of the worst of the Poison Vine or Tree family. If poisoning from this tree can be avoided, lacquer can be made as well from the American as from the Japanese species. Some experiments have been made which show the juice has exactly the same properties. In Japan, the juice is simply collected by making incisions in the bark, and collecting it in vessels, attached to the tree, which are made in the form of spoons, the juice then passing through a bamboo tube into another vessel.

STRIPED ROSES.—Roses with striped petals have appeared from time to time, and are popular; but they have a fashion of losing the stripe, after awhile, and becoming self-colored. But a race has been introduced, in the Old World, which seems to have its individual members have the stripes in what the ladies call fast colors. *La Semaine Horticole* thus describes some of these novelties.

"Panachée de Bordeaux and Coquette Bordelaise. These superb roses were obtained by accidental dimorphism from the rose Madame Georges Desse, a variation of Paul Neyron. They were introduced by M. C. D. Duprat, and have foliage dimensions and the appearance identical with Paul Neyron, only being more vigorous. The color of Panachée de Bordeaux is a bright pink, streaked by a velvety red and white. Coquette Bordelaise is a bright carmine pink, bearing a spot in the center of its petals like some Camellia flowers.

THE HARDY FLOWER GARDEN.

DOUBLE PÆONIES.— Mr. T. C. Thurlow, Newburyport, Mass., sends a box of flowers of double pæonies, the culture of which he makes a specialty, and for which he receives many awards of merit. It is not too much to say they were the handsomest we ever saw. The pæony will ever be a popular border flower.

ORIGANUM VULGARE.—It is principally the collection seeker or botanist who is familiar with that pleasant, unassuming plant, *Origanum vulgare*. Why it should be overlooked so generally by planters is a mystery, unless it be that considerable of the selections are made from catalogues, where but little to describe clearly its charms could be said, for it must be seen to be appreciated. Although a native of Europe, it has been long naturalized in this country. The writer once found it in the low hills of the Adirondacks, along a woodland roadside; but no inference should be drawn from the mention of woodlands that shade is necessary, for it does well in a sunny and comparatively dry portion of the garden. It is closely related to our common garden thyme, which fact can be readily surmised because of the aromatic odor produced from a bruised leaf of the *Origanum*, or marjoram as it is commonly known. The spikes of flowers are produced in July, in panicled corymbs, continuing through August. These and the bracts are purple, the former opening almost white, producing an excellent combination. The individual flowers being small it is desirable that they be massed to get full benefit from the color. Spreading with moderate rapidity, clumps are soon formed of dense foliage and a mass of flowers. It is not a plant to be recommended for brightening up a garden, as it is not brilliantly showy, but it would certainly be appreciated where an assortment is desired. It grows about two feet in height.

RENOVATING HERBACEOUS BEDS.—Many plants have such a tendency to increase by suckering from the roots and forming dense mats or clumps, that the soil is often overtaxed to supply sufficient nourishment. In most cases it is best to dig up the beds, divide and replant them, selecting the younger and healthy divisions. The writer has in mind, in this connection, instances of beds of *Achillea Millefolium rubrum*, *Aster tataricus*, *Helianthus Maximiliani*, *Helianthus mollis*. In some cases of the larger growing kinds it was found satisfactory to hoe out the plants in 10 to 12-inch paths through the bed, early in the summer. This relieves the plants, and the growth generally will fill out in a short time, so that the mass effect will be undisturbed.

The *Sempervivum*, or house-leek, is a frequent example of this over-crowding. Each mature plant produces several offsetts on comparatively short stems each season. As these offsets mature and develop their offsets, all parts being thick and fleshy, there is but one natural consequence. Resetting of these may be done at any time, using large or small shoots. Although having little root, the succulent leaves and stems make the transplanting perfectly sure. Thinning them out will, in most cases, answer as well as taking up the bed.

TRANSPLANTING PÆONIES.—Unlike many herbaceous plants, undisturbed pæonies improve with age. In older gardens, immense bunches are frequently seen, a mass of foliage and liberally dotted with huge heads of flowers. Notwithstanding the pleasure afforded by large clumps, it may occasionally be found desirable to transplant and divide them. While it can be done in perfect safety to the plants either in fall or spring, the former is preferable by causing less disturbances to spring growth. It has been found advantageous to divide them as early as possible, it being merely necessary that the growth should have accomplished its purpose for that season, at which time it is really waiting for destructive frost to do what we will in this case do—cut it off. To divide them, use a heavy knife or cleaver, leaving "eyes" to each division. In the vicinity of Philadelphia, this work may be usually performed in early September. They will thrive in almost any ordinary garden soil, yet to have them at their best, plant them in a rich loam, low enough to receive full benefit of rains. A liberal top-dressing of manure from which the straw has not been closely shaken, placed in the fall, gives food for strong growth besides retaining moisture and keeping the roots cool during the summer—a very delight to a pæony.

A MAGNOLIA GLAUCA VANDALIZED.--SEE PAGE 152.

FRUITS AND VEGETABLES.

INFLUENCE OF GRAFTS ON THE STOCK.—From time to time, the question arises, as if it had never been settled, as to whether there is any particular influence of the graft on the stock on which it is worked. That there is some influence, is well known. Nurserymen, in digging up rows of apple trees of different varieties, can certainly see the difference in the roots of each variety, and this difference can only be accounted for by the graft which has been worked on this root, and the explanation is plain. It is not that there is any particular change in the character of the roots; but that the character of the foliage affects the vital power. The roots of trees depend for their vigor on the amount of foliage borne on the tree. A tree which has healthy, vigorous foliage has also healthy, vigorous roots. On the other hand, a weak-growing variety that has comparatively few leaves will make weak centre roots. The difference in the vigor, of course, makes the difference in the appearance. In so far, the graft does make the difference; in other respects, it does not. A quince root is still a quince root, although a pear or apple may be grafted on it. Such difference as may arise from a difference in vigor, is all that can be achieved. In digging pears, a nurseryman can almost tell, by the roots alone, that the Kieffer had been grafted on it. It is such an extraordinary vigorous grower that the extra vigor is communicated to the stock.

Soil communications in plants, as in human nature, corrupt good manners, but do not originate or have otherwise to do with them.

INTENTIONAL SECOND EXPOSURE

THE EYE SCALE.—One of the most serious enemies of the fruit grower is the Eye Scale. Those who suffer from this terrible affliction, grope and flounder in continual darkness, and their shouts for light are truly pitiful to those who have been accustomed to the bright light of day. The Eye Scale prevails to an alarming extent in Canada at the present time, judging by the following paragraph which has been sent by the associated press to every leading newspaper in the land :

HAMILTON, ONT., June 21.—At a large gathering of fruit growers of Western Ontario, held for the purpose of discussing the San Jose scale, Professor Craig and Professor Panton laid before the meeting the results of their inspection of the Niagara orchards. A unanimous resolution was passed calling upon the Government to appoint a regular inspector of Ontario orchards and the inspection of all nursery stock coming into the country from the United States. As the remedy for the disease is the uprooting and the burning of the infected trees, the meeting considered that the Government should recompense the farmer losing his stock.

To the intelligent cultivator, a San Jose Scale is no worse than any other scale. He expects to keep his trees clear of insects, and he does keep them clear. He has not a thousand special remedies for a thousand distinct insects, but has a regular method which applies to all. Those who believe that all that is required to raise fruit trees successfully, is to dig out a hole, stick in a tree, and leave the rest to the State inspector, never succeed at any rate.

EVER-BEARING STRAWBERRIES.—Every few years a new variety of strawberry is introduced and prized for having the property of continuous bearing during the whole season. This variety, however, soon falls into disrepute. This ever-bearing character is only transient, and it is found that the character is dependent somewhat on the season as well as on the variety. The ever-bearing character arises from the fact that what was originally destined to be a strawberry runner, elevates itself and becomes a flower-bearing stem. There is no difference, morphologically, between the strawberry flower stem and the strawberry runner. There are varieties of strawberries called bush strawberries,—that is to say, varieties of strawberries that may have no runners. With such a slight difference between a runner and a bunch of strawberry blossoms, it can be readily understood how very slight a change would induce one or the other. In other words, the difference between an ever-bearing strawberry and one blossoming only at a particular season rests on no very strong constitutional peculiarity.

LIME WASH FOR SCALE.—I have just read in your monthly (June, P. 116), article by Wm. Saunders, Washington, D. C. : "Destruction of Scale on Fruit Tree Branches." This remedy is simple and effectual and ought to be known by every cultivator.

Mr. Saunders' long experience in the United States Department of Agriculture at Washington, has given him exceptional opportunities to impart information, and *he has done it so freely, and knows whereof he affirms every time, he certainly is a public benefactor*. Long may he live to continue his valuable work !

BENJ. G. SMITH.

Cambridge, Mass.

HISTORY OF AMERICAN GRAPE CULTURE.—Judge Samuel Miller, formerly of Lebanon, Pennsylvania, but for many years a settler at Bluffton, Missouri, gave the Missouri Horticultural Society a review of progress in American grape culture. We have to start with the Isabella and Catawba, though the Alexander probably out-ranks them all. The Concord gave us the next decisive points of advance. Rogers' hybrids was the next great step. The next great improvements were made by Ricketts, Campbell, Underhill, Grant and Jacob Moore, and did great service. There are yet others that should have a page in the history of American grape improvements.

THE HARDINESS OF JAPANESE PLUMS.—Doubts have been expressed as to whether Japanese plums are capable of standing severe winters. Failure has been reported from Iowa —yet they have been known to successfully mature fruit buds after passing through a winter with a record of 28° below zero. The Willard variety is said to endure unusually trying temperatures. Have any of our northern readers yet had experience with this promising class of plums?

BARREN FIG TREES.—Mr. J. C. Dixon, Beaufort, N. C., sends a fig with the annexed note :

"Can you tell me if the tree could be treated, or how the fruit could be made to mature? I have a very large fig tree in my yard. It was set there about 25 years ago, on the west side of a house, and does not have the morning sun. All other fig trees near it were killed by cold several years ago. This was not injured, and every year it has an abundant yield of figs ; but they all drop off. Not one has ever ripened. There are not any fig trees near it. It is now loaded with figs like this enclosed ; but they either dry up or rot and fall off. I would like very much to know if they can be made to mature."

On opening the fig, it was found to be full of fine, healthy stamens, and no pistils—that is to say, the flowers are wholly male, and consequently it is a barren fig tree. In fig-growing countries, a few male trees among the fruit-bearing ones are welcome, as it is believed a small insect carries the pollen to the fruit-bearing trees and renders them more productive. Usually a few stamens are at the upper portion of the fig, near the orifice, sufficient to fertilize the female flowers lining the lower portion of the fruits. It is barely possible, however, that the fig perfects what we popularly know as the fruit—that is to say, the fig—without the aid of pollen, though the seed might be supposed to be imperfect. The fig is closely related to the osage orange, and Osage orange balls are freely produced on female trees, standing alone, miles from any male tree. But though the balls perfect, they are seedless, as probably are the unfertilized figs. When, however, the Osage orange flowers are pollenized, the balls are much larger and more abundant than when the tree is standing alone—and this, probably, is the benefit which fig-growers have found from having male trees occasionally in the fig orchard.

The knowledge that the male fig is of some value in this respect, appears to have been long known, though possibly the method of usefulness was not fully discerned. The knowledge does not appear, however, to have prevailed at the commencement of the Christian era, as we find in one of the parables that the husbandman is advised not to cut down the barren fig tree, but to give it another trial, by digging around and manuring it. It is clear from this that the real nature of a barren fig tree was not prevalent at that time. But the male fig has less vital power. No treatment would get it to perfect its fruit.

CULTURE OF SEA-KALE.—One of the most delicious vegetables is Sea-kale, but it is seldom grown here, because it is too much trouble. *Lyon-Horticole* says that in France, the seed is sown in spring, and the plants thinned to give them strength. The soil should be very rich. In November, the old leaves are cleared away and the plants covered with earth. In the spring following, they are set out in rich soil, three or four feet apart, where they grow for another season. The winter following they are ready for blanching. In February, they have large, inverted pots like bottomless flower pots, placed over them. Earth is carefully placed around the pots to keep out the light.

When the sprouts have attained ten or fifteen centimeters, they are cut to within a few millimetres of the collar, ready for use. In the train of this operation, a crown of buds forms on the collar, all of which are taken off excepting three or four strong ones. As they are cut, they are left in the open air to make new shoots. The plants are generally good for five or six years.

This vegetable is boiled and seasoned with butter or white sauce, like cabbage or asparagus.

RASPBERRY CULTURE.—Mr. D. A. Turner, of St. Josephs, Missouri, makes profit from raspberry growing. He sets his plants 8 feet by four, plants and cultivates shallow but thoroughly. He pinches back the young shoots when two or three feet high, which induces side branches and more abundant crop next year. The kinds grown are of the Black-Cap class.

SALT FOR FRUIT TREES —It is an old story, but worth bringing forth as new, that salt is an excellent fertilizer for fruit trees. It must be used sparingly. A quart is enough for a comparatively young tree,—a half bushel might be spread under a bearing one,—strewing it thinly over the ground as far as the boughs extend.

BIOGRAPHY AND LITERATURE.

A WOODLAND DREAM.

Before me rose an avenue
  Of tall and sombrous pines;
Abroad their fan-like branches grew,
And, where the sunshine darted through,
Spread a vapor soft and blue,
  In long and sloping lines.

And, falling on my weary brain
  Like a fast-falling shower,
The dreams of youth came back again,
Low lispings of the summer rain,
Dropping on the ripened grain,
  As once upon the flower.

—LONGFELLOW.

THE WHOLESALE CHANGES IN PLANT NAMES.—Professor Harms, in a pamphlet on the nomenclature agitation during the latter years, compiled by request of the Commission on Nomenclature, refers in nine chapters to the lively agitation among botanists, since the publication of Kuntze's work in 1891, and the numerous dissertations on the subject. As the views of the various writers are divergent, he compiles the most important expressions on the subject during the last few years. He himself does not give his own ideas, but mentions others, *f. i.*, O. Kuntze, who advocates unconditional adoption of the Priority principle, and holds that this principle should be maintained and introduced into the nomenclature question, and to establish the mental property "of first discoverer or discoverer of" Genera and Species. He even demands this right to authors from a *judicial standpoint*.—In America these views had already gained ground to some extent, and Kuntze's labors were therefore received with approbation by many American botanists. Greene, T. V. Miller, Le Solis, and others maintain the same opinions. As the nomenclature agitation has not, so far, reached decided results—after many consultations and publications—V. Wettstein proposes, as the best means to arrive at a conclusive end, an International Botanists' Congress for the consideration of the ground features and reforms, and their eventual adoption. To facilitate the work he desires proposals in writing for the new laws, to be handed in at least six months in advance of the Congress, to serve as a basis for the dissertations. Kuntze sustains V. Wettstein in this proposal, advocating the holding of International Congress at Paris in 1900. Besides, he volunteers to act as General Reporter, and further promises to compile and publish,—not later than 1905,—a corrected "Nomenclator of all Plants,"—provided certain conditions are guaranteed him (cash?), etc., etc.

NUTTALL AS AN AMERICAN BOTANIST.—A correspondent, whose intelligent criticisms are most welcome, remarks:

"I note, page 10, col. 1, line 6, 'America's great botanist, Nuttall.' He was an Englishman who did his botanical work here. An uncle, who died in England, left him a legacy on condition that he returned to England and never left it again. He accepted the terms and went there."

The criticism, as a matter of literary propriety, is very welcome. The sentence was deliberately penned, in the belief that it was an accurate statement of fact. It brings up a common criticism on the use of the term "an old friend." We do not mean that the person referred to is old, but that the friendship is of long standing. In this case, Nuttall's botany was American in the main, though his birth place was in England. He came here a lad, a printer, with no knowledge of botany. It is said his curiosity about the Virginia Creeper turned his attention to botanical studies. Only for his work in American botany, he might never have been known as a botanist at all. There does not seem to be the slightest ground for claiming him as an English botanist because he happened to be born there, and because England was unwillingly his death-bed. He may be termed truly an Englishman,—but why an English botanist? Are we right in making this distinction? Is it not American work by an English man?

ILLUSTRATED FLORA OF THE NORTHERN UNITED STATES AND THE BRITISH POSSESSIONS,—by Dr. Nathaniel Lord Britton and Hon. Addison Brown. Published by Charles Scribner's Sons, New York. The second volume of the three purposed of Britton and Brown's Illustrated Flora has now been issued, and renews the marvel at the courage that prompted the great undertaking. They may have asked themselves if such a magnificent work, in which every species is illustrated as well as described, would ever bring in profitable returns; but if so, it could readily be answered that all who would keep up with the times must have it, and thus purchases would of necessity be commensurate with the cost. Ninety natural orders are covered by this volume, from *Portulacaceæ* to *Menyanthaceæ*.

There is little use in expressing over again regret at the wholesale change in the names of plants. One has to admire the consistency which seeks to enforce the rule that the prior name given to a plant should be the one adopted; but when it is evident that it is impossible to wipe out names that have been adopted for a century, and which have become a part of literature everywhere, there can be no other conclusion than that such a rule should never have been adopted, or that its modern interpretation is wrong.

One comfort in examining the work is that its authors are not among the ultra or reformed reformers. In this volume at least we are not taught to write out "Mr. pursh's *Ranunculus*." We may still write *Ranunculus Purshii*, as the custom has been for all time till now.

AMERICAN GRASSES, Illustrated, — by F. Lamson Scribner. Published by the U. S. Department of Agriculture.

This beautiful and useful work does credit to the National Department,—and to its distinguished Agrostologist, Prof. Scribner. It figures and describes three hundred species, and more are to follow. It is to be regretted that the work, in our opinion, is marred by the dropping of the capitals in proper names,—and in the dropping of botanical names, in many cases, which have become almost household terms in literature scattered all over the world. Those who believe, and perhaps with good reason on their side, that some of the world-wide names have been improperly adopted, should first prepare standard botanical dictionaries to which all could refer. The present helter-skelter method of righting wrongs leads to inextricable confusion. The dropping of capitals that indicate proper names seems based on no utilitarian principle. To write *Amphicarpon purshii*, *Muhlenbergia porteri*, and so on, which we must translate Mr. porter's Muhlenbergia, or Mr. pursh's Amphicarpon, instead of Porter's and Pursh's species, strikes the eye oddly. But all this has been food for regret before Prof. Scribner went into it, and the worst of it is, no one knows why!

ANNUAL OF THE FLORIDA STATE HORTICULTURAL SOCIETY.—Horticulture in Florida has a general interest. Intelligent people everywhere interested in gardening derive pleasure and profit by what is going on in this part of the world. The Annual of the Florida State Horticultural Society is replete with information of this character. The Society depends for its existence on the annual fee of $1.00, but this secures the Annual, which is worth the money, as well as encourages a useful Society.

Geo. L. Taber, Glen St. Mary, Florida, is President.

THE TRUTHS OF HISTORY—A remark is attributed to Napoleon, that history is simply fiction somewhat unanimously agreed upon. Evidences that this judgment is correct continually present themselves. Just now, there is a paragraph "going the rounds" retailing a romantic career of the Senior Conductor of MEEHANS' MONTHLY,—"a fatherless boy, with a widowed mother, bravely battling against fate," etc., the whole of which is absolutely apocryphal, — but it will probably get into regular history sometime.

ADANSON.—The French botanist, Adanson, was one of the greatest of the last generation, and his work is found of great value even to the present day. When the French Academy of Sciences was founded, he was one of its original members; and it is stated, in his biography, that he gave as a reason for his non-attendance on one occasion, that he could not be present, because of the want of a new pair of shoes.

GENERAL NOTES.

LARGE CHERRY TREES.—The Asiatic, or Garden cherry trees, that are seen in many parts of Eastern Pennsylvania, are often of so large a size as to seem a part of the original forests, the seeds of which were, in the first place, scattered by the birds that had stolen the fruit from the farmers' orchards. So immense is the size of some of these old trees, that one might think they had been living on American soil for many centuries, instead of the comparatively few years since the white man first set foot on the shores of the Delaware. Indeed, some of these trees are probably of a larger size than any found in Europe. The following paragraph, taken from the *Germantown Telegraph*, will give some idea of the immense size to which these trees have already attained: "One of the original specimens of the cultivated form of wild cherry tree was cut down on the Meehan property recently, as it stood on the line between the property and Dorset Street. The girth of the tree was about 14 feet, and was one of the largest specimens in this neighborhood, but it was somewhat decayed and dying of old age. Two other large specimens, probably measuring more in girth than this one, are still standing and apparently in a good state of preservation. One stands on the old farm occupied by Jesse Hinkle, and the other near the Wissahickon Inn. The latter in particular is well preserved and must be very old. Where limbs have been broken or sawed off, the wound has been covered with tin to prevent decay."

STROPHANTHUS.—The medical journals are full of praise at the results of *Strophanthus* as a remedy in the so-called heart-disease. Probably *Strophanthus Kombe*, a native of tropical Africa, is the species intended. There are some half dozen species of the genus, already known to botanists, from that region. The plant belongs to the natural order of *Apocynaceæ*, of which the Oleander may be cited as a familiar illustration. Strangely enough, the preparation of the common Foxglove, or *Digitalis*, which has been hitherto prescribed for heart troubles to the exclusion of nearly all other drugs, is pronounced to have no influence on the heart at all, now that *Strophanthus* is being praised.

LONGEVITY AND HORTICULTURE. — One should foster a love of gardening even though engaged in active business. The time comes when most desire rest. The writer has known many of this class,—but they soon tire of doing nothing, and seem to have little to live for. Many, on the other hand, have been known to retire with a love of gardening, and in almost every case a renewed lease of life results. In mind, while this is being written, is Mr. Benj. G. Smith, of Cambridge, Mass. Always in his two-acre garden, and though now in his 82d year, he is so much hidden by his roses and honeysuckles that the grim reaper cannot help missing him.

HEALTHFULNESS OF APPLES.—There is a great deal of what might be termed nonsense, passing current in regard to the healthfulness of various articles of diet. Many recommendations of this kind are given to the world by people who simply sit down, imagine, and write. But as to the healthfulness of apples, there is no question. A few well-ripened apples, eaten daily, makes one of the best of life preservers, and in bilious diseases the apple is a health-giving remedy.

A CALIFORNIA PLANT CATALOGUE.—The geat extent of the United States could well be studied by one familiar with garden plants from the catalogues of nurserymen and florists alone. Mrs. Theodosia B. Shepherd's catalogue, issued from Ventura-by-the-Sea, California, is suggestive of this thought. The immensity of pretty flowers, as grown in her establishment, only California could suggest. In like manner an eastern catalogue would surprise a Californian. Mrs. Shepherd's picture adorns the title page.

SITUATIONS WANTED

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENERS: At all times, we have on our register the names of competent gardeners, whom we would be glad to recommend to persons in need of same as being fully competent to take entire charge of any place, either large or small. Gardeners desiring situations should correspond with us. No charge, whatever, is made for any such service rendered. THOMAS MEEHAN & SONS, Germantown, Philadelphia.

GARDENER with first-class references, has charge now at a gentleman's place of 25 acres-lawn, 6 acres vegetable gardens, 12 greenhouses, 28 years' experience in Europe and this country, wants to change his place. "A. Z." Office, MEEHANS' MONTHLY.

GARDENER.—Situation wanted by a young man thoroughly experienced in all branches. Married, no children. excellent references. Address E. G., Box 366, Mamaroneck, New York.

GARDENER, desires situation on a private place. Life experience in every branch of horticulture and landscaping. Married, children all grown. Unexcelled references. Thomas H. Geraghty, Newport, R. I.

GARDENER.—Young German desires private place. Married, no children. Thorough experience in every department of gardening as well as landscaping. Good references. John T. Fischer, West Conshohocken, Penna.

FENCING.—It is really worth while sending for "The Coiled Spring Hustler" issued by The Page Woven Wire Fence Co., Adrian, Mich., as it contains so much real information about fences. The company sends it free to all askers, but be sure and mention MEEHANS' MONTHLY.

GARDENER.—Situation wanted by a thoroughly practical gardener. Good references from present employer; English, age 38; married, one child. Address "G. J.," care MEEHANS' MONTHLY.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of Rare and Beautiful California Novelties. Many New Begonias, New Cosmos, Rare Cacti, etc. Offered by no others.

Ventura-by-the-Sea, Cal.

VARIEGATED FUNKIA

FOR IMMEDIATE PLANTING.

The ordinary, large green-leaved Day Lilies, with their graceful spikes of lilac or whitish blue flowers are well-known to all who possess grass plots large enough to admit of a few ornamental plants; but the variegated sorts are not so frequently seen, and they remain practically unknown to the average home gardener. There is a deep contrast between the dark green and white of the striped leaves, forming an equal contrast with the green grass of a lawn. It also makes a good border or edging for walks or beds, the leaves lying closer than the large green form. We offer fine pot grown plants at 15c. each; $1.25 per 10 or $10.00 per 100. From pots, these may be planted out at any time.

Our grounds are always open to visitors, and we invite inspection of our stock especially during the summer, when the plants are in leaf and bloom, feeling sure that the visitor would be well pleased with the stock. Address or call on

THOMAS MEEHAN & SONS

NURSERYMEN and LANDSCAPE ENGINEERS

Upper Church and Chew Sts.

Telephone 9411 A. Germantown, Phila., Pa.

"CACTUS GUIDE"

Published Monthly

Devoted to the culture of . . . **Cacti and Succulents**

Subscription price 50c. a year

SAMPLE COPY FREE

Cactus Guide, Sharon, Pa.

C. G. Van Tubergen, Jr., Haarlem, Holland

CHOICE DUTCH BULBS

ATTRACTIVE BULBOUS PLANTS

CATALOGUES FREE

C. C. ABEL & CO., Sole Agents, Box 920, New York

The Rose: Its Cultivation, Varieties, etc.

BY H. B. ELLWANGER

Directions for cultivation, for planting, pruning, propagation, the treatment of diseases and insect enemies, particularly valuable for its classification, alphabetical and descriptive list of nine hundred and fifty-six varieties. Cloth, 16vo. Price, **$1.25.**

THOMAS MEEHAN & SONS, Germantown, Pa.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

Potash.

Too little Potash in the fertilizer used produces a "scrubby" crop, just as a lack of sufficient grain fed to stock means a "scrubby" animal.

Free

An illustrated book which tells what Potash is, how it should be used, and how much Potash a well-balanced fertilizer should contain, is sent free to all applicants. Send your address.

GERMAN KALI WORKS, 93 Nassau St., New York.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

VOL. X. NO. 463.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

JANUARY 6, 1897.

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

TREES

SHADE, + FRUIT, + ORNAMENTAL.
Descriptive Catalogue free. Landscape Gardening in all its branches. Visitors from Phila. take Germantown Ave. electric cars to Church St. Nurseries, 2 sqs east of cars, or Pa. R.R. to Carpenter Sta, or Reading R.R. to Walnut Lane Sta.
MEEHANS' NURSERIES, Church and Chew Sts., Germantown, Phila.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

4

CHIMAPHILA UMBELLATA.

For Meehans' Monthly by L.Prang & Co.

CHIMAPHILA UMBELLATA.

PIPSISSEWA.

NATURAL ORDER ERICACEÆ.

CHIMAPHILA UMBELLATA, Nuttall.—A span or two high, very leafy in irregular clusters or whorls, often branched; leaves cuneate-lanceolate, with tapering base, sharply serrate, not spotted, shining; peduncle 4-7 flowered; bracts narrow, deciduous; filaments hairy on the margins only. Gray's *Synoptical Flora of North America*. See also Gray's *Manual of the Botany of the Northern United States*, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.

Human knowledge has not yet been able to penetrate the mystery of the first appearance of plants on the earth's surface, or by what means they were spread over wide areas. In a misty way we have a glimpse that the innumerable forms we now find, have been evolved from a few primordial types,—and that a few individuals appeared in some locality we term the primeval home, and from thence traveled by seeds or other means over an extended area. But this glimpse does not satisfy. When these suggestions are applied to such a plant as the one treated of in this chapter the mist thickens, and the mystery seems more profound. *Chimaphila umbellata* encircles the whole of the northern portion of the globe below the arctic circle, missing Great Britain and some comparatively local areas, and extends on the Atlantic portion of our country from far northward in Canada, down the whole area east of the Mississippi, and to a considerable distance into Mexico. It does not seem to have any close relatives from which it could have been evolved, for the habit is so distinct from ordinary Pyrolas which the earlier botanists associated it with, that the parts of the flower were mainly relied on to warrant the association. And to imagine that a plant which seems so indifferent about reproduction from seed should have wandered from one circumscribed home in that way over such a wide portion of the globe is too much for human reason. We may find it in some abundance in some portion of a wood, and absent in other portions though the conditions for its growth may be absolutely the same,—and a quarter of a century afterwards it will be found confined to its original quarters. We might say that the conditions for a more free dispersion by seeds were more favorable in the past than in the present,—but such a suggestion is wholly gratuitous, unless we knew absolutely that the plant was at first limited to a narrow area, and had to disperse its progeny in that way. It seems to be conceded that a plant so remarkably distributed over the world, must have been for many ages a denizen thereof,—but again comes the strong objection that the changed conditions following the centuries, and local areas, ought to have produced variations in the characters of the plant,—but the plants from Canada and Mexico are practically the same, as are the plants of Pennsylvania and the plants from the Corea, and seem to have carried along the same identity through all time. And this too in spite of an evident power in the plant to vary easily. Herbarium specimens are seen to differ widely in many respects. The leaves are sometimes two inches wide, and nearly round. Occasionally the whole of the foliage is of this character, though usually the lower leaves are roundish, while the upper ones will be narrow. The toothing of the leaves is also irregular. In some plants the edges will be very nearly entire; in others the leaves show numerous sharp teeth, as in the specimen chosen to illustrate this chapter. But the difference in the inflorescence is still more remarkable. Though the flowers are usually in a cluster that warrants the specific name *umbellata*, they are at times so scattered along the rachis as to be fairly racemose. Besides the widely distributed *Chimaphila umbellata*, we have the comparatively local, strictly American species, *Chimaphila maculata*,—but if evolved the one from the other, there seems no indication of any return to overlapping lines. It is further remarkable that there is a local species, *Chimaphila japonica*, differing from the widely diffused *Chimaphila umbellata* also.

CHIMAPHILA UMBELLATA.

For Meehans' Monthly by L.Prang & Co.

CHIMAPHILA UMBELLATA.

PIPSISSEWA.

NATURAL ORDER ERICACEÆ.

CHIMAPHILA UMBELLATA, Nuttall.—A span or two high, very leafy in irregular clusters or whorls, often branched; leaves cuneate-lanceolate, with tapering base, sharply serrate, not spotted, shining; peduncle 4-7 flowered; bracts narrow, deciduous; filaments hairy on the margins only. Gray's *Synoptical Flora of North America*. See also Gray's *Manual of the Botany of the Northern United States*, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.

Human knowledge has not yet been able to penetrate the mystery of the first appearance of plants on the earth's surface, or by what means they were spread over wide areas. In a misty way we have a glimpse that the innumerable forms we now find, have been evolved from a few primordial types,—and that a few individuals appeared in some locality we term the primeval home, and from thence traveled by seeds or other means over an extended area. But this glimpse does not satisfy. When these suggestions are applied to such a plant as the one treated of in this chapter the mist thickens, and the mystery seems more profound. *Chimaphila umbellata* encircles the whole of the northern portion of the globe below the arctic circle, missing Great Britain and some comparatively local areas, and extends on the Atlantic portion of our country from far northward in Canada, down the whole area east of the Mississippi, and to a considerable distance into Mexico. It does not seem to have any close relatives from which it could have been evolved, for the habit is so distinct from ordinary Pyrolas which the earlier botanists associated it with, that the parts of the flower were mainly relied on to warrant the association. And to imagine that a plant which seems so indifferent about reproduction from seed should have wandered from one circumscribed home in that way over such a wide portion of the globe is too much for human reason. We may find it in some abundance in some portion of a wood, and absent in other portions though the conditions for its growth may be absolutely the same,—and a quarter of a century afterwards it will be found confined to its original quarters. We might say that the conditions for a more free dispersion by seeds were more favorable in the past than in the present,—but such a suggestion is wholly gratuitous, unless we knew absolutely that the plant was at first limited to a narrow area, and had to disperse its progeny in that way. It seems to be conceded that a plant so remarkably distributed over the world, must have been for many ages a denizen thereof,—but again comes the strong objection that the changed conditions following the centuries, and local areas, ought to have produced variations in the characters of the plant,—but the plants from Canada and Mexico are practically the same, as are the plants of Pennsylvania and the plants from the Corea, and seem to have carried along the same identity through all time. And this too in spite of an evident power in the plant to vary easily. Herbarium specimens are seen to differ widely in many respects. The leaves are sometimes two inches wide, and nearly round. Occasionally the whole of the foliage is of this character, though usually the lower leaves are roundish, while the upper ones will be narrow. The toothing of the leaves is also irregular. In some plants the edges will be very nearly entire; in others the leaves show numerous sharp teeth, as in the specimen chosen to illustrate this chapter. But the difference in the inflorescence is still more remarkable. Though the flowers are usually in a cluster that warrants the specific name *umbellata*, they are at times so scattered along the rachis as to be fairly racemose. Besides the widely distributed *Chimaphila umbellata*, we have the comparatively local, strictly American species, *Chimaphila maculata*,—but if evolved the one from the other, there seems no indication of any return to overlapping lines. It is further remarkable that there is a local species, *Chimaphila japonica*, differing from the widely diffused *Chimaphila umbellata* also.

INTENTIONAL SECOND EXPOSURE

A remarkable feature in the history of *Chimaphila umbellata*, is that no one has ever been able to make a success of it under cultivation. Sometimes when great care has been exercised, it will live for a year or two but finally it dwindles gradually away. Foreign nurserymen, who by reason of the permanence of occupations, by which the accumulated experience of employees can be turned to success, and by which they are enabled to list numbers of plants usually regarded as difficult to cultivate, do not offer this in their catalogues. The difficulty has been referred to the peculiar character of the roots. These are wiry in general, with fibres which seem to be annual, pushing out sparingly along their length. But it may be that a love of shade has considerably to do with failure. The open sunlight, which is so necessary to success with most garden flowers, may be objectionable here. In its wild state it seems to love shade particularly. The author has seldom noted it in open places. Its favorite home is under the dense shade of forest trees. In forests of oak and hickory it seems especially at home. This is particularly the case where the trees are so dense that the roots absorb all the moisture, and leave little else for humbler vegetation. In pine forests it is often the only kind of vegetation that manages to maintain an existence. Under the shade of kalmias it also thrives.

It remained for our acute botanist Michaux to first note that our plant was not a *Pyrola*, as European botanists had classed the one here illustrated. Linnæus in his "Flora of Sweden" — one of his earlier works, and before he thought to give plants but two names only—descṛibed it as *Pyrola pedunculis sub-umbellatis*, from which we can see how he derived the name for his binomial system. It had been described long before by Bauhin as *Pyrola frutescens arbuti folio*, and, considering the somewhat shrubby habit as compared with other Pyrolas, it is remarkable that Linnæus did not retain Bauhin's name, as he seemed to be fond of last terms. The shrubby habit is well illustrated in our picture, where a branch with the seed vessels of the past year is growing by the side of the flowering one of the present season. The tendency to have the flowers sometimes racemose already referred to is shown in the flowering branch, following the somewhat umbellate character of the former year. Michaux thought that the sessile undivided stigma and the beaked anthers, shown in fig. 4, made a striking difference from *Pyrola*; and Pursh, following Michaux's thought, established for it the new genus *Chimaphila*. The plant had been known as "Winter-green" to the Swedes, probably from its use in winter decorations,—and the name "Winter-lover"—that is to say *Chimaphila*—was thus suggested. The whole family of *Pyrola* are known as "Winter-green" in Germany. The present species simply bears the family name. Pursh seems to have regarded the American form as different from that of the Old World, and named it *Chimaphila corymbosa*, which is now regarded as a synonym.

It was regarded by the Indians as their best remedy for rheumatism. Pursh says they called it Sipsisewa,—but others give it as Pipsisewa. According to Griffith they employed it in a strong hot decoction so as to induce copious perspiration. In modern medical practice, he says, it is generally given in decoction, made with two ounces of the bruised leaves boiled in three pints of water down to a quart, of which a pint may be given in twenty-four hours. Its chief use evidently is as a diuretic, and at the same time it has a tonic effect on the digestive organs. Its value was first made known to the settlers by the Indians, and thus the Indian name came into use.

It is sometimes remarkable that plants closely related, will yet have wholly different elements in their structure. In *Chimaphila umbellata* are found yellow, needle-like crystals, which are odorless and tasteless, and which do not seem to have been noted in other species.

The plant has a number of common names, Ground Holly, and Prince's Feather are the commonest. The Indian name already noted is the commonest in popular use, though Winter-green, the name under which most of the species are known, is frequently applied. In literature when reference is made to the Winter-green this is the species generally intended.

EXPLANATION OF THE PLATE.—1. Branch from a plant on the Wissahickon near Philadelphia. 2. A year old branch in fruit. 3. Present year's branch in flower. 4. Magnified anther, showing the tooth-like projections at the apex of the anther.

WILD FLOWERS AND NATURE.

A SEPTEMBER DAY.

"It was in mild September, the gossamer it lay,
A billowy thread of silver, then slow through air away,
It floated o'er the river that scarcely bent the reed,
Where violet saffron-blossoms made purple all the mead."

—HOWARD WORCESTER GILBERT.

ACCLIMATIZING.—Dr. Franceschi, of Santa Barbara, aptly remarks that, "when speaking of Acclimatizing it ought to be understood, not as the fruitless attempt to modify the intrinsic nature of plants, but as the study of the native conditions they are living in, and of the possibilities of reproducing the same in other countries."

And yet acclimatizing may mean a little more than that. In nature there is variation to a limited extent in every characteristic of a plant. This extends even to individual hardiness or tenderness. No two individuals from the same seed sowing will be exactly capable of resisting cold. In a mass of common garden purslane, all under exactly equal circumstances as regards "environments," some plant will be killed by a mild white frost,—while others will continue green until ice is formed. It is by taking advantage of this constitutional difference in the hardiness of individuals, and again and again selecting individuals from successive sowings, that some varieties of garden fruits have become successfully cultivated in Minnesota and other northern regions. But even this line variation has its limits, which no "environment" or "natural selection" can change so far as any evidence has been obtained.

CATALPA SPECIOSA.—In many parts of Pennsylvania, *Catalpa bignonioides* is quite common, particularly in the southern counties. It is always found in greater luxuriance in damp valleys than in any other situation. Along the Schuylkill River, the Wissahickon and the Pennypack Creeks, it is particularly abundant, and in the last days of June, when it is in flower, it is worth going miles to see the grand display its large panicles of whitish flowers make. It forms a round-headed or somewhat flat-headed tree, its width often exceeding its height. *Catalpa speciosa* is a more western species, and will thrive in the Northwestern States, where *bignonioides* will not. Besides this advantage, it is of much more tree-like growth, forming a straight trunk to a considerable height, and producing excellent timber. It flowers more than a week in advance of the other. Its individual flowers are larger and whiter than those of *bignonioides*, with some other minor differences. Either one makes an excellent lawn specimen.

JOSEPH MEEHAN.

AUTUMN COLORING OF AMERICAN TREE LEAVES.—It is generally believed that the rich coloring which our oaks and other trees put on in the fall of the year is due to the conditions of the climate. It does seem that in some way or other this peculiar condition of coloring should be due to local causes, but if so it has assumed a hereditary character, for, when the trees are planted in the Old World, they still continue to maintain the character of rich coloring, which they assumed in their native place of growth. Our American Oaks are especially valued in the Old World for the bright coloring of the leaves which they present in the fall of the year as happily as they do in America.

FERTILITY OF HYBRIDS.—One of the most remarkable of experiences, is the fact of so many leaders of scientific thought teaching that hybrids are infertile, in spite of the every-day experience which horticulturists place before them, that such a doctrine is wholly untenable. Everyone of our several species of *Sarracenia*, or pitcher plants, have been made to hybridize together, — and, from these hybrids, numerous other varieties are being raised. But, judging from the past, we shall hear of the general sterility of hybrids for many years to come.

PHOTOCOPY OF ORIGINAL

EARLY GOLDEN-RODS.—A correspondent at Riegelsville, Pa., on July 28th, says: "Golden-rod has been blooming at Riegelsville, Pa., for ten days past. I notice while it does not grow so high on Red Shale formation, it blooms earlier and is richer in color."

Another correspondent writes:

"Apropos of the interesting note on Solidagos in the August issue of MEEHANS' MONTHLY, I might mention that a friend and myself gathered a fair-sized bunch of Golden-rod on a rocky hillside along the Schuylkill River near Phœnixville, (some thirty miles above Philadelphia), on the afternoon of July 4, this year. It certainly seemed incongruous to be bringing home this characteristic fall flower on a hot day before mid-summer, and I suppose it was an exceptionally early find. Examination of the plants proved them to be *Solidago arguta*, Ait., with one stalk of *S. squarrosa*. The latter species, I think, is uncommon in our locality. Its heads of flowers are quite large for a Golden-rod—resembling, indeed, small yellow asters, if there were such things. The involucral scales in this species have prominent, spreading tips and an appearance technically known as squarrose, whence, doubtless, the specific name. On the 24th of July, *S. arguta* was noticed again in flower and bud, on the banks of the Schuylkill just above the city.

An interesting species sometimes found in this vicinity and not uncommon elsewhere, is the Sweet Golden-rod (*S. odora*). Its leaves are dark and shiny, and when examined with a pocket lens will be found to be covered with pellucid dots. Crushed in the hand, they give off a delightful odor, which Dr. Gray, in his Manual, calls anisate; to me, it recalls liquorice. On August 15, last year, specimens were found a few miles from Camden, N. J., already gone to seed.

C. F. SAUNDERS.

Philadelphia, July 29th, 1897.

In Germantown, *S. lanceolata* was found in bloom on July 17th. Possibly the list of early flowering species is larger than supposed.

THE SPROUTING OF YOUNG FERNS.—Mr. C. F. Saunders, tells *The Linnæan Fern Bulletin*:

"It is worth the young fern collector's while to keep his eyes open for the infant stages of the fern as it emerges from the prothallus—a stage we might call the fern in its cradle. Being small the prothalli are apt to elude the most sharp sighted, but that makes them all the more worth looking for. On damp, shaded banks, on wet stones or under shelving rocks, in situations where young ferns are growing, close search may reveal the tiny green discs from the size of a pin-head up to that of ones little-finger nail, sometimes barren of fronds, sometimes with one or more minute frondlets, sometimes nestled up close to the roots of a plant well started in its growth. Early spring and fall have been the only seasons of the year when the writer has noticed them, though, doubtless, they may be found in summer too. To have actually seen the fern in its prothallus stage, will indicate very clearly the difference between a spore and a seed."

CONOPHOLIS AMERICANA.—One of the most interesting of our native plants is the "Squaw-Root," sometimes known as the "Cancer-Root," and technically classified as the *Conopholis Americana*. This plant, while widely distributed over the eastern and central portions of the United States, is nowhere common, and about Philadelphia it is the most select of an exclusively select set of plants.

Without notice, it makes its appearance; its visit continues for but a few days, and when it departs, we know we shall not see it again for a year. Its vigorous, unnatural looking flowers quickly mature, soon pass, and when they are gone, their blackened stems with clusters of globular cells, are all that remain to mark the place. Year after year the process is repeated and the result is the same,—the increase. if any, is imperceptible.

Perhaps the plant blooms "unobserved" and continues comparatively unknown because of the nature of its growth, perhaps it is because its general appearance is not attractive and will appeal to no one but a botanist. Whatever be the cause, the fact that the plant is little known remains, and many who have made a study of our native wild flowers an object have never seen it, and few it would seem have definite information upon its peculiarities, and upon its haunts and habits.

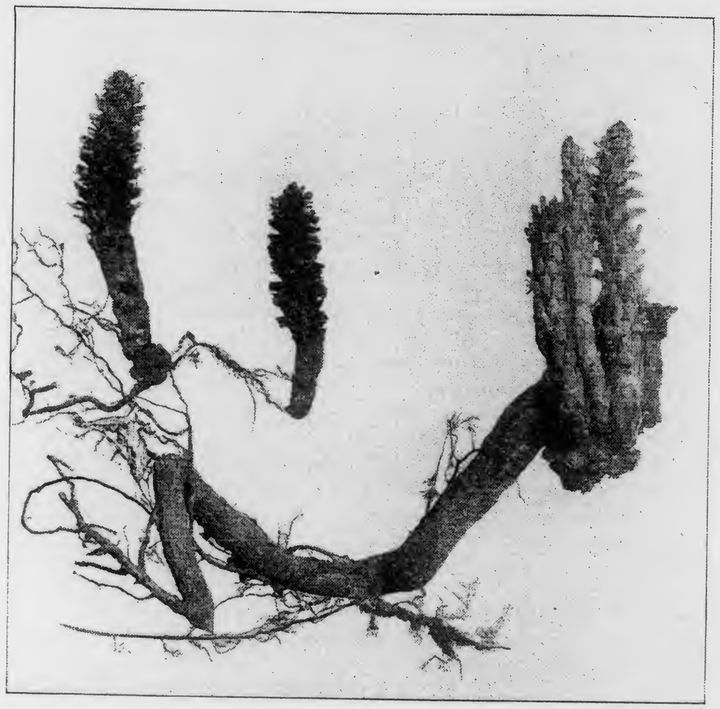
By the skill, and through the generosity of Henry Troth, of West Philadelphia, Pa., the writer is permitted to present a cut of this instructive plant. Those who had the pleasure

of viewing Mr. Troth's "wild flower photographs" at a recent exhibition, will recognize "his hand" in the present production.

The Squaw-Root, though rare, was early known. Thomas Walter, in his *Flora Caroliniana* published in 1788, records it, and Pursh, in *Flora Americæ Septentrionali* of 1814, has it in his list. Dr. W. P. C. Barton, in his *Floræ Philadelphicæ*, mentions it, but gives the credit for his knowledge to William Bartram. Nuttall, in his "Genera of North America Plants," acknowledges his indebtedness to the same authority. In the "Medical Flora of the United States," Rafinesque gives a description of the astringent and antiseptic properties of the plant. Among other who have noted and recorded the *Conopholis*, are Dr. William Darlington, who found it in Chester County, Pa., before 1837; Dr. James Darrach, who includes it in his list of "Philadelphia plants," published in 1853, and later by Parker and Martindale, who found it in western New Jersey, and by Eugene Starr, who found it in the woods of Delaware County, Pa.

The specimen figured was collected in the northern part of Philadelphia County bordering upon Fairmount Park. Throughout the Southern United States, the plant has been noted by Chapman, Beck, Brereton, Ward, and Basil Sollers. Thus, though rare, the plant has not been neglected.

About Philadelphia, the Squaw-Root usually makes its appearance about the tenth of May.



CONOPHOLIS AMERICANA--THE SQUAW ROOT.

In an early season the plant may be found in bloom towards the close of April, and in a late season it may not appear until the beginning of June,—the season determining with this as with other plants, the time of, and the duration of the bloom.

The southern botanists, as a rule, record the plant as flowering in April or May; while the northern ones, including Pursh and Darlington, place it as late as June and July. Near Philadelphia, the plant should be searched for

PHOTOCOPY OF ORIGINAL

about the date given. The plant is elusive for the reason, that sometimes it will not appear above the surface, it being unable to pierce through the heavy crust of decayed leaves which usually cover the earth in woods, and the upward pressure of the plant being sufficient to elevate the compact mass of decaying vegetation above it.

Plants which thus develop under cover, elongate vertically at the rate of about two inches per day, are nearly white in color, and and as a rule are infested with vermin,—the Mealy Bug being a common enemy.

The *Conopholis* usually grows in clusters. In some instances, but three or four or less stems appear together, in other instances, as many as fifteen or twenty stems form a common centre, make a mass twelve inches or more in diameter. The stems rise from an irregularly shaped perennial tuber, which may be either above or below the surface. The stems are smooth and waxy, and the parts which reach the light, range from a pearly white at their first appearance, to a tawny yellow at maturity, the flower and the stem being the same in color throughout. When the flowers have passed their meridian, they soon become hard and dry, change rapidly to a tan color, and later to a deep black, which color they maintain to their decay and disappearance. The flowers develop and perfect themselves, in from four to six days. At first the stems of the *Conopholis* are fleshy and vary from three-quarters of an inch to one and one-half inches in thickness, and rise vertically to a height of from four inches to seven inches above the tuber. The stems are covered with imbricated, ovate-lanceolate scales, which at a later period loose their characteristics upon the flowering portions.

The part of the stem which usually appears above the surface seems fertile, but though botanically the organs are perfect, the flowers rarely if ever produce fruitful seed. The calyx is four or five toothed with two bractlets at the base, and is more deeply cleft on the lower side. The corolla is enlarged at the base, is tubular, and inflated on one side. It is composed of two larger envelopes or scales on the outside, and of four minor scales or petals on the inside. Each of the two larger envelopes is supplied with two stamens, one stamen projecting from the tip of the petal, and the other one extending from its base. The stamens are four in number, and at maturity, distinctly protrude beyond the corolla. There is one pistil,—depressed, with its stigma deeply lobed.

The seed vessels are globular and valvular, each semi-division being sub-divided, and each cell being filled with minute spore-like seed. The plant perpetuates itself mainly, if not wholly from "eyes" in its thickened corm-like tuber.

The geographical range of the *Conopholis* is said to be from Canada on the north, to Louisiana on the south, and from the Atlantic States to the Mississippi River.

Like most parasitic or semi-parasitic plants, the *Conopholis* has a preference; but by no means is it confined to the root of the oak tree, as some of the Botany's would indicate. Individual plants, and sometimes groups of the *Conopholis*, are supported by a few straggling roots which penetrate from three to six inches a peaty bank. Generally, however, the parasitic tuber fastens itself upon decaying or immature roots, and continues thenceforth as part of them.

In many respects, the *Conopholis* resembles a near relation,—the "Beech Drop"—(*Epiphegus Virginianus*).

Both rise from a tuber, both have a preference; but with each the first object is existence, and if the root of an oak or a beech cannot be appropriated, they each will accommodate themselves to another tree,—or that failing, will preserve an existence upon a barren bank, forcing nature to serve nature.

Isolated groups of plants live on and perhaps excite no wonder. Often it may be they are passed unnoticed. Are they the remnants of a glory past, or are they the pioneers of a new creation? What assures their continuance? Everywhere there are adaptations, but how many pause to observe, or attempt to understand? Are these differences and vagaries mere eccentricities? If not, what are they? If nature is "Law, when is there an infraction of "order"? If the Soul "which is the life thereof" is a "myth," what is the origin and purpose of being, and what is its object? These are questions which rise from our subject and assert themselves. At least,—they "stand for judgment."

EDWIN C. JELLETT.

POISON IVY.—Just what it is that induces Poison Ivy to play its injurious pranks on some people at some times and not at others, is still a profound mystery. One thing is certain, that the number of people susceptible to the poisoning influences must be extremely scarce, from the fact that, in the vicinity of Philadelphia the highways and byways are overrun with the plant to an enormous extent. It is frequently impossible for people to go by without brushing against it, and, if it is the vapor or some exudation from the plant which causes the trouble, thousands of persons must be under the influence to every one who suffers from it.

The writer of this paragraph knows of a tract of land on which the plant grows profusely, and on which many scores of laborers are employed. These laborers are frequently set to weeding and pulling out the plant by the naked hand, and, so far as the writer knows, none of these men were ever poisoned by it. The cattle eat it greedily whenever they get an opportunity. It seems to have no injurious influence on them. Yet it is well known that numbers of persons do suffer seriously from it, and it is this peculiar feature which gives to the Poison Ivy a special interest.

THE MANCHURIAN LILAC--SYRINGIA AMURENSIS.--SEE PAGE 169.

SUCCULENCE OF MARINE PLANTS.—A correspondent asks a question which has probably never been investigated,—why plants that grow along the sea coast, or in salt marshes, have succulent vegetation in so many instances?

PHOTOCOPY OF ORIGINAL

AUTUMNAL SUGGESTIONS. — Already there are symptoms of approaching autumn. The Red Maple in the swamps is coloring on one side; the sumacs here and there hang out their jubilee banners. Every where, golden-rods begin to assert their supremacy, and the blue and white asters show their stars in the copse.

Long wreaths of blossoming clematis clamber over the bushes—things of exquisite beauty. There is an abandon and reckless grace about this Virginia-bower, which commends it to the artist. What is there, we wonder, so beautiful as one of our vine-covered stone walls? These are our American ruins, in place of ivy-mantled towers.

Among other intimations of autumn is the gathering of the swallows on the telegraph wires. Do they in this manner communicate a message of departure to comrades further north? There are more things in Heaven and Earth than even Horatio kens. Even at noontide we now hear the rattle of the cicada, that policeman of August, perpetually sounding his alarm. Of him old Anacreon wrote:

> "Happy the cicada's lives,
> For they all have voiceless wives."

What depth of connubial experience in the Anacreon family these ungallant lives suggest!

Daily we expect the katy-did with her eternal iteration of an unusual charge, what *did* poor Katy do?

We have often wished that Tennyson, who has done so much to embalm the English autumn, had known our golden-rods and asters. They would well grace an Arthurian idyl. Our own poets are beginning to comprehend them, and we find recent American and Canadian verse aglow with these September flowers.

Other compositæ, too, are prominent in the landscape, notably the tall purple thoroughwort, the iron-weeds, and thistles. The common white thorough-wort is not very showy, but is curious from its perfoliate leaves. The leaves are opposite and connate around the main stem, which thus appears to grow through one leaf. The same thing is shown in some honey-suckles. In some plants, like the fuller's teasel, the two leaves thus united, form a cup filled with water and isolate the stem above from unwelcome crawling intruders. It is surmised also, that from such reservoirs some water is absorbed by the plant itself through the agency of thin-walled cells. While ants and such-like are excluded—insects on the wing, notably bees and Coleopteræ, are lured to flowers by color and odor.

We should not close without a thought of tribute to the cardinal-flower, the summers crowning glory. By some cool stream, glassy from its depth, over which the drooping trees form gothic arches, one will see long ranks of scarlet cardinals in religious procession. Usually they are accompanied by closed gentians, white turtle head, and blue monkey flower.

WILLIAM WHITMAN BAILEY.

Brown University. Providence, R. I., July 15, 1897.

SMILACINA RACEMOSA.—A neglected wild-flower. I was reminded the other day, on passing upon a city street a man with a bunch of False Solomon's Seal in his hand, how comparatively little attention is paid to this flower, *Smilacina racemosa*, by those who go to the woods in spring in quest of the wild blossoms. Perhaps the rather coarse appearance of the plant in contrast to the grace of the anemones, violets, crowfoots, etc., which every one loves to gather, causes us to pass this humbler beauty by. Yet, if a dozen or so of the plants are broken off and bunched together, the effect of the delicate white bloom amid the luxuriant green leaves is somewhat akin to that produced by a handful of Lilies-of-the-valley, though on a much larger scale. Such a bouquet put in a large vase makes a useful adornment for a hall or roomy apartment, and will last for a number of days. C. F. SAUNDERS.

Philadelphia.

FRAGRANT LADY SLIPPER.—So far as I am aware, the Stemless Lady-Slipper (*Cypripedium acaule*) has always been regarded as devoid of fragrance. In the hundreds that I have examined in the upper Susquehanna Valley, there was certainly no trace of perfume. I was quite surprised, therefore, to find in several specimens brought in from Northern New Jersey and Southern New York, this spring, a decided spicy perfume that is quite pleasing. This must add another species to the list of wild flowers that are occasionally fragrant.—*Willard N. Clute, Columbia University, New York City.*

GENERAL GARDENING.

AUTUMN.

> Every season hath its pleasures;
> Spring may boast her flowery prime,
> Yet the vineyard's ruby treasures
> Brighten autumn's sob'rer time.
>
> —MOORE.

WAGON TRUCKS.—In these days when spraying trees and flowers has become a regular part of progressive gardening, some implement for hauling the liquid and the machine is as essential a part of the furniture of a garden, as a wheelbarrow or a hoe. When the work is heavy we can use a horse; but there are innumerable occasions when we need something that we can draw by hand. A very useful article of this kind is the lawn truck, made by the Farmer's Handy Wagon Co., of Saginaw, Michigan, which is represented by the annexed illustration. The wheels are wide so that it can be hauled over a lawn or even on ground where a narrow wheeled vehicle would cut into the earth too deeply to be drawn. The sides are arranged for moveable frames, so that it can be used to take away mowings, leaves, or weeds, and carry in manure to places where a horse and cart could not go. It is one of those useful inventions that deserve to be better known.

SYRINGA AMURENSIS—TREE LILAC.— As a lilac, this is both unique and handsome. It is small flowering, blooming the middle of June, after it has made a foot of new wood growth.

The large clusters of creamy white flowers are in beautiful contrast with their surrounding glossy, deep green, large, leathery foliage.

The cut on page 167, represents a branch with four pairs of compact bloom panicles, each one of which is 10 inches wide by over a foot long. The entire tree being thus densely studded with those immense bloom clusters, making a magnificent solitary specimen on the lawn and filling the entire grounds with its rich fragrance.

Those of us who have waited for the blooming of the dear old purple variety of our grandmothers' gardens will not feel impatient on waiting on this royal plan. Now is our opportunity to train it into a straight, open-topped tree, fitting it for greater beauty when it shall bloom.

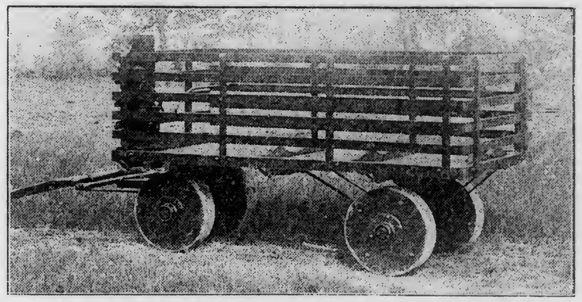
Its entire absence of suckers, and its smooth, upright trunk gives it more the appearance of an ash tree than a flowering shrub.

The difficulty with which it is grown from cuttings will prevent its soon becoming common, altho' one of the prettiest and most desirable trees in cultivation.

SARAH A. PLEAS.

Dunreith, Ind.

THE JAPANESE SNOWBALL.—Notwithstanding the immense popularity achieved by the Japanese Snowball, there must be thousands of gardens that are yet without it, for the demand rather increases than falls off. It is one of those plants which have a double advantage. First in its remarkable plaited leaves, and then from the immense abundance of flowers which it bears in late spring. Most of our readers know that it is only the sterile variety of the Japanese species, *Viburnum tomentosum*. The fertile form is less attractive.



WAGON TRUCKS.

PHOTOCOPY OF ORIGINAL

FROST PROTECTORS.—Gardening is an excellent intellectual occupation. One of its chief good points is the habit it fosters of looking ahead. The garden lover is seldom taken unawares. In winter he is planning for spring and summer tasks,—while among the summer duties is preparing for winter.

In olden times, one of the odd jobs for slack periods was the making of straw mats for protecting frames, and for placing around tender plants to guard them from wind. But the progress of invention makes even this foresight less of a burden. The most recent of these labor-saviug appliances is what is known as Palmer Mats. They appear to be made of Burlap, and have woolen lining, but are so light that they can easily be dried, rolled up, and put away when needed. It is a great thing to boast of, that the old-fashioned, clumsy straw mat has seen its best days.

PREPARING ALMONDS AND WALNUTS FOR MARKET.—The shells of nuts have to be brightened before they are marketable. They are treated with burning sulphur, but Prof. G. W. Hilgard says this does not act in a uniform manner. He recommends dipping instead of exposing to sulphuric acid, and proposes the following formula :—

"The nuts, placed in a cane or splint basket (such as Chinese use for carrying), are dipped for about five minutes into a solution containing, to every 50 gallons of water, 6 pounds of bleaching powder and 12 pounds of sal soda. They are then rinsed with a hose, and, after draining, again dipped into another solution containing 1 per cent. of bisulphite of lime ; after the nuts have assumed the desired tint, again rinse with water and then dry. Instead of the second dipping, the nuts may be sulphured for ten or fifteen minutes."

MUSHROOM GROWING.—During the last few years, it is estimated that growing mushrooms for market has increased to a very great extent, and yet it has not increased to nearly the degree that was hoped for by those who would like to have them in more general use. Just why this is does not appear. They certainly bring very high prices in market ; and it is said that the high prices are against them for general use. If they could be raised more cheaply, so as to enable the grower to ask lower figures for them, there would certainly be a greater demand for them. We have to bring things down to the condition of "necessaries of life" before people inquire much for them. While they remain as mere luxuries, few think to ask for them.

RAISING YOUNG FERNS.—It is not generally known that our native ferns can be readily raised from the spores,—those little dust like products that are found in great abundance on the under surface of many fronds. A good method is to fill a pot, with any ordinary good garden soil, ¾ the depth, the remaining ¼ to be filled with brick broken to about the size of peas or beans. This pot can be sunk in a vessel of water to about ½ the depth of the pot. On the broken brick, the spores can then be sown, and the vessel placed in a comparatively shady spot. The brick will absorb enough water to be continually moist, while at the same time permitting the air to circulate through the vessel. This combination of moisture and damp air is all that is necessary to have the fern spores germinate freely.

CONSTRUCTION OF ICE-HOUSES.—In England, the plan of having ice-houses so built that a large portion is under ground, is still the prevalent method. In America, it has long since been found that the natural warmth of the earth is a foe to ice preservation. No one, we suppose, in America, would think of having an ice-house built in any way than wholly above ground.

GREEN MANURE.—Burnett Landreth finds that a crop of turnips ploughed in, is of considerably more value as a fertilizer than a crop of clover. Of late years, Crimson Clover, sown the latter part of summer, has come into considerable use as a green manure. It is not stated whether this is the kind of clover Mr. Landreth has in mind.

HASTENING SEED GERMINATION.—A German horticulturist writes that he hastens the germination of such hard seeds as *Juniperus Virginiana* (the Red Cedar) by soaking them for 20 to 30 minutes in a solution composed of 1 part muriatic acid to 100 parts water. Nurserymen simply put the seeds in a mass of damp earth, called a "rot-heap."

ORNAMENTAL CUCUMBERS.—Some gardeners make a special point of having a collection of plants of the cucumber family. They are all climbing vines, and require trellises for their support. The chief point of interest is in their fruit, some being round and others long, and of different shapes and varieties of color. A little patch of the different kinds of Cucurbits will afford a fund of pleasure for a whole season.

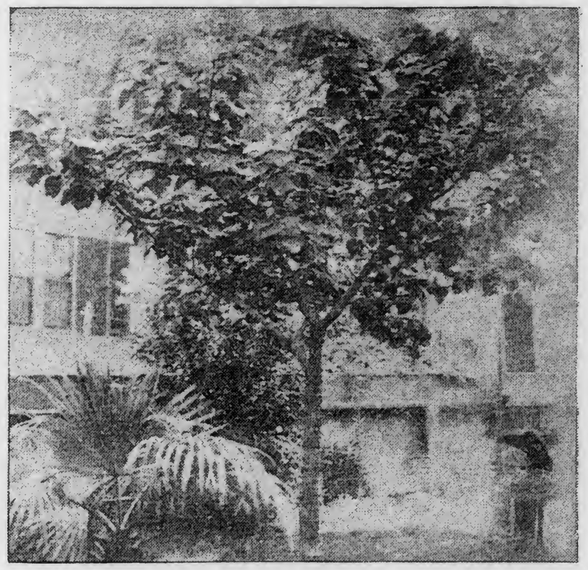
WIRE FENCES.—It is often desirable to have fences at once. We cannot always wait for a live fence to grow,—and it may not be desirable to put up an expensive artificial fence. Woven wire comes in admirably for this purpose,—and when it has done all we desire, it can be removed and used elsewhere. Much money has been thrown away on wire fences. Ignorant persons could not provide against expansion and contraction under thermometrical variation. Woven wire permits of this, and is in every way just what is needed.

TWINING VINES.—If one should be looking for a kind of twining vine that is likely to give permanent satisfaction under varying conditions of soil and climate, the different varieties of honeysuckle should have the first choice. The famous Honeysuckle of the Old World, and of England in particular, does not seem to thrive very well in America ; but the different varieties of the Japan species prosper admirably. There are now sufficient varieties of this kind to furnish a good list from which one may select. The kind known as Hall's Japan Honeysuckle is very desirable for its fragrant flowers, changing from white to yellow as they mature. Another sort, known as the Chinese, but which is also a variety of the *Lonicera Japonica*, has a rosy tint to its white flowers which renders it very acceptable, although the plant is a weaker grower than the Hall's variety. One of the best, in many respects, is the one known as the Evergreen. This has white flowers, and, in addition, bears a crop of showy berries in the fall, rendering the plant particularly attractive at that season. This variety has a more creeping habit than the other two, and is often employed to trail over embankments, or to take the place of grass beneath large trees, or in other shady places.

PAULOWNIA IMPERIALIS,—This floral lady at present residing on my premises, is very indignant at your characterization of her as "ungainly when young" in the July number of the magazine. In proof of the contrary, she desires me to enclose you a snap shot of her present appearance with the information that she was received from you in the spring of 1893, and was then not much bigger than a broomstick. Now her stem, straight as an arrow, measures 21 inches around the base and 18 inches 5 feet from the ground, where she forks out. She is about 15 feet high and the same broad. She also wishes me to ask how much larger she must be before she is allowed to bloom. G. A. H.

Providence, R. I.

The paulownia commences usually to bloom when about fifteen years old.



A YOUNG PAULOWNIA.

PHOTOCOPY OF ORIGINAL

PRUNING EVERGREENS —Some of the newspapers have cleared the dust from an old story in the following extract ; but it is as true, and as well worth teaching to-day, as it was when first put together : " Thirty years ago Thomas Meehan, in a paper before the Pennsylvania Horticultural Society, said : 'There are no evergreens, or if there are, all plants are evergreens. The difference is simply that some plants retain their leaves for four months, others six, some twelve and a few two years or a little over.'

In this paper, which mainly related to evergreens and hedges, Mr. Meehan said of pruning:

"The true beauty of an evergreen lies in a vigorous, luxuriant growth, and yet not such as consists of only a few strong branches here and there, but a thick and full growth, strong and bushy—fat, as we may say—not a huge skeleton, remarkable only for its large bones, but well filled with firm flesh of a healthy hue. To get this, and yet not interfere with the trees, vigor is the aim and object of evergreen pruning."

RAPID GROWTH IN VEGETATION.—The rapid growth of the Kudzu Vine, *Pueraria Thunbergiana*, to which MEEHANS' MONTHLY originally called attention, created at the time great astonishment ; but it is quite likely that other vines would show as good a record if they had the same opportunity to display their energy. On the grounds of the writer, there is a lofty pear tree of the old St. Germain variety, which has long been given up to the attacks of the pear fungus. The fruit never matures, but the tree has been retained simply because it is a tree. For the sake of the variety, a plant of the male hop vine was planted at the base of the tree. No exact examination of the ratio of growth of the vine has ever been made, but it certainly reaches the top of the tree in just as short a time as the Kudzu Vine would do. We have very little doubt but that if the hop vine were given a fair opportunity to compete in growth with our Kudzu visitor from Japan, it would show quite as admirable a record.

CHRYSANTHEMUM CULTURE.—Perfection of chrysanthemum culture is to have them retain their leaves healthy as long as possible. If the plants lose their leaves early, the bloom will be small. Sometimes the lighter leaves are attacked by a parasitic fungus which causes them to drop off early. On the first appearance of the parasite, the plant should be syringed with copper sulphate solution. Sometimes these attacks are encouraged by allowing the leaves to become weak for want of good food, for although it is not impossible for fungus parasites to attack healthy vegetation, it is also true that they attach themselves more readily when the plant is weak. Manure water, or a surface dressing of manure, are precautions to be taken against this result. Again, leaves are frequently weakened by allowing the plants to become too dry. Careful cultivators can easily guard against this. On the other hand, stagnant water in the earth is also injurious. This means that, to have healthy plants, the pots or boxes in which they are grown should be so arranged that water can pass readily away.

INSECT ROSE PESTS :—Mrs. Seliger tells the *Hartford Times* :

"There are no less than thirty-two different enemies among insects known to science which pry on the rose, either in bud, bloom, leaf, or stem. Not exclusively all live on it, for they also attack other vegetation. Of late a new mode of catching these in many forms has been made by hanging up wide-necked glass jars half filled with a sweetened substance, as molasses water, or a weak solution of fruit syrup, into which the insects dive for a drink and so get caught, and they cannot escape. It seems to be worth trying.

DAPHNE CNEORUM.—Few things are more beautiful or more desirable, in every respect, in the small garden than the pretty *Daphne cneorum*. Its sweet-scented, pink blossoms are always appreciated, while there is something about the habit of the plant which seems to give it additional value. In former times, it was more difficult to transplant, and even when it succeeded in living would scarcely grow to satisfaction. Since, however, it has been the custom of nurserymen to graft them on stronger species, they transplant as well as ordinary things. It seems to make itself at home in almost any kind of soil. Generally speaking it blooms only once—in the early summer time,—but it often flowers again.

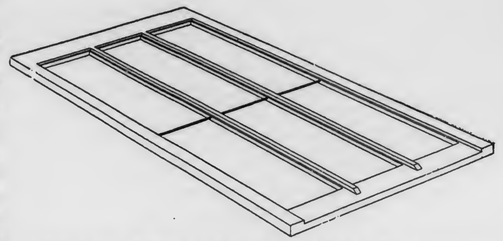
PARK SUPERINTENDENTS.—Mr. O. C. Simonds recently read a remarkably interesting paper before the Chicago Horticultural Society as to the kind of man required to be a park superintendent. The concluding paragraph is especially forcible. "A Park may be conducted in such a manner as to exert an elevating influence on all who go to see it, to teach them to respect other's rights, to show them what is in good taste, and to give them the purest kind of enjoyment. In the domain of landscape art it should take a leading position, keeping up with the best thought of the times. Its treatment should be simple and natural, and not accompanied with grotesque features which deprave people's taste.

The man in charge of a public park has an opportunity to exert an influence which should place him on a level with the leading ministers, doctors, and other professional men of the present time."

NEW OR RARE PLANTS.

SWEET-SCENTED BEGONIAS.—A race of sweet-scented Begonias is announced in the Old World. One of these named *Begonia Baumanni* is said to be delightfully fragrant.

STRIPED FLOWERS.—Variegated flowers are not common in the wild state,—at least this seems to be the result of our numerous observations the past years. We may conclude, then, without committing ourselves too much, that they are more particularly the product of garden art. It seems that different elements brought together cause a mutable result. Some



UNGLAZED SASH FOR VIOLET FRAME.—SEE PAGE 174.
(Fig 1.)

variegated ones have been noticed amongst hybrids, for instance, the *Ranunculus* of Asia, pinks, snapdragons, marvel of Peru, petunias, and a host of other kinds. It is not rare to see "sports" suddenly spring up amongst them on plants of several colors. One branch, two branches, even half a plant, will produce variegated flowers with those of a single color. Carnations, azaleas, petunias and roses, furnish numerous examples.

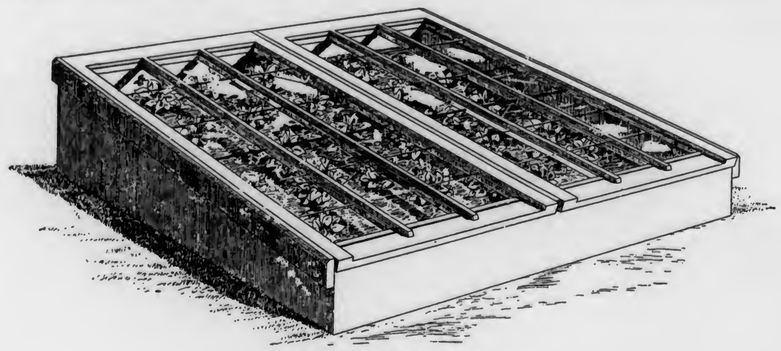
Amongst perennial plants or shrubs, a cutting or graft is made of these digressions of colors with the object of fixing them.

One in the business of annuals and biennials is careful to gather the seeds of the variegated flowers, and tries to make them permanent.

When a white flowered variety shows itself exceptional in a seed plot, as they sometimes do, being sown, it, in its turn, gives variegated flowers, especially in certain kinds,—more particularly if the albinos are the origin of hybrids. V. VIVIAND-MOREL.

From *Lyon Horticole*, by S. Meehan Lanning.

CISTUS LAURIFOLIUS. — A LITTLE KNOWN EVERGREEN. — An almost unknown hardy



VIOLET FRAME.—SEE PAGE 174.
(Fig 2.)

PHOTOCOPY OF ORIGINAL

evergreen shrub is *Cistus laurifolius*, a native of the Mediterranean. This has been grown in the vicinity of Philadelphia for the past ten years, and its wood has never been injured in the slightest degree. In extra severe winters its foliage will be partly injured, but no more than occurs to Mahonias and other hardy evergreens. The leaves of this *Cistus* are about two to three inches long, bright green when young, with silvery underside. They are slightly gummy to the touch, and have an aromatic agreeable odor. About the close of June it bears good sized white flowers usually four or five in a bunch.

Undoubtedly this could be grown much further north of this as it has stood the severest winters here perfectly well.

JOSEPH MEEHAN.

Germantown, Pa.

ZONALE GERANIUM—"THOMAS MEEHAN."—Zonale Geranium, "Thomas Meehan" is one of the new varieties raised by Mr. Georges Bruant, the famous improver of flowers. It is a remarkably vigorous grower, and has a large truss of flowers. In the specimen on the table of the writer the truss has twenty-five expanded flowers, with as many more unexpanded buds. It will evidently remain a long time in flower, a good point in a bedding geranium.

A leading point of interest is in the peculiar shading of the large, semi-double flowers. It is mainly of the scarlet tint common to this class of geraniums, but in various aspects, as a lively purple tint, similar to what is known as changeable silks. It has evidently the elements of wide popularity.

THE HARDY FLOWER GARDEN.

SELECTING PLANTS FOR PROMINENT POSITIONS.—The average herbaceous plant in common cultivation will adapt itself to any ordinary situation, with perhaps a mere reduction of vigor. But some stubbornly resist efforts of adaptation, and remain utterly useless for general purposes, For instance, the new *Rudbeckia laciniata* "Golden Glow," in a hot and dry soil will make a growth of about 3 feet in height, producing under-sized heads of flowers; but the foliage and flowers to all appearances are in a perfectly healthy condition. The same plant placed in a moist soil and atmosphere will grow 5 to 6 feet in height, producing quite large heads of flowers. On the other hand, *Dicentra spectabilis* and *Tradescantia Virginica* are examples of ones that must have certain conditions, namely, partial shade, —or their permanent good effect is sadly spoiled. The writer has in mind beds of these that have stood year after year in full sunlight, in prominent places where it is expected the plants shall look well throughout the summer; but the first excessively hot spell of weather scorches them to the ground, and one-half of the season sees a bed of disgraceful brown tops. The roots are not at all injured,—in fact, the tradescantias will frequently send forth fresh shoots from the ground in the early fall. It will be seen, therefore, that some knowledge of the plant's natural localities is very necessary where prominence and permanence is desired. A plant whose habitat is guarded by almost constant shade, may not be expected to stand excessive sunlight; one that is accustomed to full sunlight and moist soil cannot be expected to grow luxuriantly in a dry, sunny situation—or very shady,—although the growth may not be seriously injured. An error of the latter kind is less to be feared than the former.

RAISING VIOLETS.—The violet is a universal favorite. They are so easy to raise, that it is surprising they are not in every garden. They are not injured by frosts, but the severe frost has to be kept from them to get them to bloom all winter long. A little two-light cold frame will secure this effectually. If made tight and strong, they will do good service for many years. The frame may be put into shape, and the violets planted in September or October, and the plants will be in flower by Christmas and then keep it up until far into spring. One of the troubles is to get the sash and frames properly made. But these can now be procured ready made, and shipped to any point at a small cost. To show what a good frame should be, and how it may be set for a bed of violets, we have been kindly permitted by Lord & Burnham to transfer the illustrations presented on page 173 from their catalogue,—Fig 1, showing an unglazed sash, Fig 2, the sash placed in position with its plants set in the earth beneath.

There are few enemies of the violet grower. The Red Spider sometimes attacks them, but is not a serious pest in the winter time. Sometimes the Violet fungus causes brown spots on the leaves, a disease easily kept in check by copper solutions.

Not only for hardy violets is the cold frame and sash useful, but in numerous ways do they come in handy. Some rickety, home-made articles are often seen lying around that are more plague than profit. It is a saving to buy them ready made, from those who make a business of supplying first-class articles.

HARDY CHRYSANTHEMUM GOLDEN PHEASANT.—Many of the so-called hardy chrysanthemums are found to require more or less protection from severe winters. In the vicinity of Philadelphia, Golden Pheasant has been found to be a very satisfactory variety in this respect. It is a true pompon, producing golden flowers in great abundance, in large, corymbed panicles. The under side of the petals being brown, a pretty combination of color is made as the petals unfold commencing with the outer ones, and thus showing brown centres rounded with yellow. It will be found a valuable addition to the fall flower garden.

NELUMBIUM LUTEUM.—Dr. Schneck says of the Yellow Nelumbo Lily:

"The plant is well suited to win in the struggle for existence, and when established in a pond will crowd out everything in the form of vegetation that comes in its way. Its principal enemies are hogs and frost, and the aggressive agriculturist who drains off its muddy haunts and converts them into cornfields.

It is the glory of the water garden. This luxury can be made with less than $40 expense. Dig a hole say ten feet across and four feet deep; wall and cement it; fill it half full with rich muck and sharp sand; put the tubers deep in this and fill with water. The plants will keep the water pure; refill as the water evaporates; other acquatic plants and fishes can also be added. In two seasons the Nelumbo will have taken entire possession, and all the culture necessary will be to cut off old or soiled leaves. When cold weather comes cover the pond to protect from frost. The following spring one-half bushel of cement will usually mend all damage done to the wall by frost."

FRUITS AND VEGETABLES.

TREE GROWING UPSIDE DOWN.—John Meiners' distillery, in Milwaukee, has not been in operation for nine years. It is an old landmark, and is surrounded with the interest that every old building in Milwaukee awakens in the historian. The grounds about it are covered with grand old trees and rustic benches, and form a little by-way nook, whose existence one would not suspect from the road outside the fence at the south.

But the object of greatest interest in this unique place is an old apple tree that was planted twenty-eight years ago, with its limbs in the ground and its roots in the air, and which still lives to bear fruit and sprout branches where roots should be, and roots where twigs and leaves should be, a curiosity to all beholders.

Mr. Meiners was induced to make the trial through an old German legend, in which such an inverted tree played a prominent part.

When Mr. Meiners planted his twenty-five apple trees they showed no signs of life for a long time. Finally the one still remaining showed a leaf, softened by summer rains and expanded by the sun, and with a great deal of care it was nursed to a sturdy life. It grew very slowly, and has not grown more than two feet in height since it was planted. It is now about four feet high, with a trunk fifteen inches in diameter. The roots had a tendency to droop, and it was found necessary to prop them up with a trellis. Instead of growing vertically, they have extended horizontally in long, slender arms. There are about twenty of these, radiating in all directions. Each year, as they grow longer, additional props were put underneath, and they have extended along the trellis flat, straight as a ceiling, with little slender shoots running at right angles and intertwining with one another so closely that they afford some protection from the rain to one who may stand underneath. The top is circular in form, and about fifty feet in diameter. The tree has borne fruit for about twenty years, and is now covered with little green apples. The fruit is of good quality, but the variety is not known by Mrs. Adolph Meyer, daughter of Mr. Meiners, who now occupies the old homestead with her husband and family.

PHOTOCOPY OF ORIGINAL

SPINACH.—Many of our common garden vegetables are natives of northern climates, and will only grow when the cool temperature suits them. For that reason, they come to perfection in late autumn and early spring. One of these is the spinach. It is usually sown in the north-eastern States about September, and comes to perfection in October or November. To keep it from being drawn out of the earth by freezing and thawing, a light covering of straw is thrown over. The snow falling on this keeps the leaves in place. Early in the spring, it is uncovered and is in season for use for at least a month before it commences to flower, when it is past its usefulness. It is a vegetable that is fond of very rich earth,—in fact, the soil cannot be too rich to produce a good crop of spinach.

VARIATION IN THE CHARACTER OF APPLES.—When botanists study plants as species they are often surprised to find in the same genus of plants some species that have a remarkable tendency to vary. They will hardly find the same species growing with what they call the normal character in any two localities. On the other hand, they will find some species in which the individuals seem exactly alike no matter in what part of the world they are found. This tendency to individuality is found among varieties of fruits just as much as among varieties of flowers, although it is not generally supposed. The Seckel Pear is an illustration of this. Its peculiar flavor, a something which one can hardly describe, is always sufficient to decide that the one in question is a Seckel Pear; but the difference is in size and form, and the character of the russeting, will vary so that we have known pomologists of experince sometimes doubt whether the Seckel they had in hand was really a Seckel or not. The Baldwin apple is another class of varying individuals. Some years ago, Mr. Engle, an authority on apple nomenclature residing at Marietta, Penna, had one form of Baldwin so very far away from the normal character that he propagated it as a distinct kind, under the name of the Penn Apple. The variations will frequently be found in the normal apple, the fruit being undoubtedly from the same tree or trees in the same orchard. The normal character of the Baldwin is to have the flesh of a greenish yellow tint, yet from the same tree will often be found one with the flesh of a clear white, and again some individuals of this white class will have a red tinge of the skin streaked through the flesh. We have seen this difference in the color of the flesh so very prominent that good judges of apples will frequently doubt whether the fruit which can undoubtedly be proven to be Baldwin was really such. The chief interest in this question comes from the thought which often arises as to whether fruits can hybridize to such an extent as to influence the fruit that is actually hybridized. In the case of the Baldwins referred to, the impressson that would arise in the mind of the orchardist would be that the flowers had been fertilized by pollen from some variety with normal white flesh. The law of individual variation to which we have referred is quite sufficient to account for this or even greater changes.

APPLES ALL THE YEAR AROUND.—The superabundance of the apple crop last year has had one good result for the future of the orchardist. It rendered apples so cheap that the consumption was greater than ever before. A taste of this kind, once stimulated, generally continues; consequently, the demand will be larger in seasons to come than it has been hitherto. This year, apples have been in Philadelphia markets the whole year through. Last year's supply of late varieties,—such as the Baldwin, had scarcely disappeared before the Russian variety Tetoffsky came in from Virginia. These, of course, will be followed by better kinds. Few of the Russian apples are of a very high quality, and the Tetoffsky, unless carefully grown, is little better than a first-class Crab. Still it is noted by the market men, that being an apple in name at least, it sells well, being so early.

A PERSIMMON ORCHARD.—The *Florida Farmer* states that some one in that state has been so much encouraged by annual sales of persimmons, that he has extended his orchard to the extent of about six or seven hundred trees. They all seem to sell readily at profitable prices. Over a thousand cases were shipped the past season. He has every opportunity, however, to select the best variety with which to graft his trees. There is said to be a variety with seedless fruit.

THE GRAVENSTEIN AND PYCHON APPLES.—The Gravenstein Apple, spoken of by Mrs. Johnson, of Victor, Colorado, deserve all praise bestowed, and more, too. It is unquestionably the finest table fruit of apples in existence. Its delicious aroma and unsurpassed flavor, juiciness, and grain of the flesh; thin skin, of a clear yellow (not deep golden) and red on one side, generally make it a marked beauty among all. I know of no apple here, of our many kinds, which comes near to it, though several kinds pass for it. Its earliness for general use, is also a fact. About Christmas is its best time, having then been ripened enough to be in prime condition for eating, though some mellow ones are always found between them as soon as fully grown. In Holstein, Roumania and Mechlenburg, all bordering on the Baltic, this apple is grown to perfection, and if only one apple is wanted, have the Gravenstein, by all means.

One other distinct and different apple, but also of fine flavor, rosy color, punctured, with white fine flesh, and a pointed shape, the so-called Pychon (Peechan), is also raised in that German locality by people of cultivated tastes, while the tree is a somewhat slender and reserved growth, as if to show its exclusiveness. I have not yet come across it in American gardens. MRS. WILHELMINE SELIGER.

Hartford, Conn.

The difficulty with many kinds of apples, as well indeed as of other fruits, is that they are over nice in their choice of cultural conditions. When removed from locations in which they have earned a good name, they refuse to exert themselves. It is not only that varieties of apple from England, France, Germany or Russia, have these peculiarities. In our own country some varieties will not do well outside of a limited territory. Once in a while they thrive all the better for the change, as in the case of the Bartlet Pear, which is far better in America than as the William's Bon Chretien of its native England. Knowing the great store placed on the Borsdorffer apple in Germany, it has often been brought here; but it grows so weakly and poor, that its culture is soon abandoned. Just why these conditions for thrifty growth are so peculiar with some kinds has not been definitely ascertained, "climate and soil" are the ambiguous terms to designate the facts.

SEED SOWING.—The usual failure in getting seeds to grow is from sowing them too deeply in the earth. If it were possible to keep the seeds dark and moist, they would be all the better from being sown absolutely on the surface. Every one familiar with forest growth must have noticed how forest tree seeds, which simply fall to the earth and are covered by the few leaves or the remains of grasses, germinate without difficulty. In cherry trees, especially, the stones, which have fallen from the tree, lying on the surface all winter, sprout and grow rapidly when spring time comes, and yet cherry seeds from the same tree, collected by the seed sower, sown in the way in which seeds are usually sown, frequently fail to grow. In order to have seeds as near the surface as possible, and yet protected against drying up, the great prince of American practical gardeners,—the late Peter Henderson,—recommended for planting vegetable seeds, that the garden line should first be stretched along in the direction where the vegetables were to grow, sprinkle the seeds along the line entirely on the surface, and then simply tramp them in the ground along the line. In this way no garden seed ever failed to grow if it were good, and garden seeds are generally good, for it has been found that even old seed, if guarded against extreme heat or moisture, will continue to preserve its vital power for a definite period. Still every purchaser desires to get seed as fresh as possible. If the suggestions given are borne in mind, there will be very seldom complaints about the failure of garden seeds to grow.

DESTROYING SEED WEEVILS.—Seedsmen treat peas and other "buggy" seeds on a large scale by placing the bags containing the seeds in a fireproof, practically air-tight building devoted to that purpose, setting shallow pans holding carbon bisulphid in various parts of the room near the ceiling. After being thus subjected to the fumes for about twenty-four, sometimes as long as forty-eight hours, the room is opened and thoroughly aired. The United States Department of Agriculture has experimented to ascertain whether seeds so treated have the vital powers injured. It finds no injury from 24 hours; but a period of 48 hours does in many instances. The pea is the chief sufferer from the weevil.

PHOTOCOPY OF ORIGINAL

BIOGRAPHY AND LITERATURE.

LESSONS FROM ADVERSITY.

Some natures in the sunshine bask with clos'ed eyes,
Nor latent energy display till storms arise.
Like maples—when a cold breath from the north
Brings out their gorgeous hues of red and gold.
The summer sun could ne'er these ruddy tints unfold.
It needs a touch of frost to call them forth.

—KATHERINE MORSE.

ELIZABETH FRY.—This lady who has become well-known to garden lovers by her instructive and pleasant communications as Editor of *Southern Florist and Gardener*, has resigned the position through ill health, which a good rest, it is believed, will restore.

STUDENTS HAND-BOOK OF MUSHROOMS OF AMERICA.—By Dr. Thomas Taylor. Published by A. R. Taylor, Washington, D. C. Dr. Taylor purposes to publish illustrated descriptions of American Mushrooms in serial form at 50 cents per part. The first number has made its appearance. The descriptions are in popular language and very clear, and, with the admirable chromo-lithographs, one is enabled to identify the species with absolute certainty.

HOUSE PLANTS AND HOW TO SUCCEED WITH THEM,—by Lizzie Page Hillhouse. Published by the A. T. De La Mare Co., New York. This little book is full of practical suggestions which will be of great value to the house-plant grower. Its botanical sins will not interfere with its value in this respect. The name of the daisy illustrated is not *Bellis*, as stated, but appears to be some *Pyrethrum*, — and the house-plant grower may rarely hope to have a *Fuchsia* grown as is the one figured here.

THE POVERTY OF ADANSON.— H. says: "Without some further explanation, it will not follow, as might be inferred from the paragraph at page 159, that Michael Adanson was too poor to buy a pair of shoes because he sent to the Academy as an excuse for his absence from the meeting, that he wanted a new pair of shoes. I knew of a similar case in a large public body where members were expected to send excuses, of one of the wealthiest offering just such a reason. But there was grim humor in it. It was *gout* shoes he needed and which did not arrive in time."

DR. W. P. GIBBONS.—Dr. Gibbons died at his home in Alameda Co., California, May 17, 1897, in his 85th year. He was born at Wilmington, Del., April 19, 1812, and received his scientific impulses from the Philadelphia Academy of Natural Sciences,—botany being a special study. In 1846, he graduated as M. D., from the University of the City of New York. He started as a physician in San Francisco in January 1853. California owes much of its early botanical history to his labors,—and icthyological interests received a large share of his attention in more recent times.

THE SYNOPTICAL FLORA OF NORTH AMERICA.—Nothing seemed nearer to the heart of the lamented Dr. Asa Gray than the desire to live to complete a Flora of North America. But the continual collections of new plants required intermissions of labor on the great task, until death came with the great object of his life unfinished. But his successors at Cambridge are laboring to complete the work he so lovingly cherished. Another volume has just been issued, edited and chiefly prepared by Dr. B. L. Robinson. This completes the orders included within Caryophyllaceæ and Polygalaceæ. The remaining portions of the great work are advanced, and it is hoped that the parts additional to complete the work will appear more rapidly than their predecessors. Dr. Robinson and his colleagues deserve the thanks of all lovers of the amiable science for their earnest devotion. No better monument to a man so universally beloved as was Dr. Asa Gray could be constructed than in the finishing of this great leaders' task. The work can be produred from Dr. Robinson, Cambridge, Mass.

DR. INCREASE A. LAPHAM.—Dr. Lapham was one of the self-made scientific men of whom America has reason to be proud. His broad mind grasped the problems of many branches of science, and in some, as in Botany he was, pre-eminent. Dr. Gray honored him in the germs *Laphamia*, one of the family of *Compositæ*, chiefly found in the southwest, and of which there are some dozen or more species now known. He was fond of Meteorology, and had on his house in Milwaukee, where the writer was once hospitably entertained, probably the first weather observatory ever constructed on this continent. In connection with this last named topic, the Chicago *Chronicle* has this to say:

"Increase A. Lapham, the distinguished Milwaukee scientist, was born in 1811 at Palmyra, N. Y., and died near Oconomowoc, Wis., in 1875. He began life as a laborer, and was later a surveyor and civil engineer on the line of construction of the Erie canal. He afterward moved westward, and was connected with canal works in Ohio and Wisconsin. He was a pioneer of Milwaukee, where he settled in 1836. From that time until his death his standing and writings as a naturalist attracted both scientific and popular attention. In botany, geology and meteorology he was regarded as one of the highest experts.

Dr. Lapham began in 1836 a series of thorough observations on the lake levels. In 1849, after thirteen years of close examination, he announced the discovery of slight lunar tides on Lake Michigan. He based his belief in this phenomenon on the regular rise and fall of the lake from a cause which could not be attributed to variable winds, drouths or freshets.

Dr. Lapham was the first to point out the value of the telegraph service in prognosticating storms, especially on the great lakes. Happening in the telegraph office at Milwaukee in 1868 or 1869, it was accidentally mentioned by an operator that a fierce storm was raging in Omaha. He inquired as to the direction of the wind, which was from the west. Believing that the storm would reach the lakes, and calculating its force, he caused notice to be sent to the lake ports of the threatened disturbance. His forecast proved true, and that portion of the Lake Michigan fleet that stayed in port escaped serious damage, if not great disaster. After the organization of the Signal Service, in which he rendered great assistance, he was appointed signal officer at Chicago, but was obliged to abandon its duties on account of ill health."

CHANGES IN PLANT NAMES.—The discussion in the Old World, on the propriety of the wholesale change in the names of plants, is taking somewhat of a personal turn. Mr. Otto Kuntze, who is a leader in the van of those who desire these changes, remarks, in a recent paper, that the refusal of the authorities of Kew to throw the shadow of their great names over this movement—is only equalled in obstinancy by the spectacle of the English people continuing to measure by yards, feet, and inches, when all other peoples have adopted the decimal system, which is at once national and rational. It is by no means certain that it is obstinancy alone that induces the English people to hesitate about changing their system of measuring and computation. They assert that the number twelve, which they take as their starting-point, is much more readily divisable into smaller parts than the decimal number ten; although the latter is easier for some purposes of calculation. At any rate, there seems no necessity for these exhibitions of temper among scientific men. It reminds one of Bret Harte's celebrated "Society on the Stanislaus."

WOMEN AS DOCTORS OF PHILOSOPHY.—The Pennsylvania University has recently opened its doors to women, and at the last examination two of the public school teachers of Philadelphia, already well known as successful teachers of botany in the Girls' Normal School, gained the honors of Doctor of Philosophy. These are Mrs. Lucy Langdon Williams Wilson, now the wife of Dr. E. B. Wilson, also an accomplished botanist; and Miss Adeline Schively. When it is known that these ladies have been regularly teaching, and had only their evenings and Saturdays for pursuing their University studies, their success seems the more honorable.

MR. JOHN DUNCAN.—Some time since it was announced that this well-known writer on horticultural subjects had been engaged on the *Southern Florist and Gardener*.

PHOTOCOPY OF ORIGINAL

GENERAL NOTES.

USES OF THE HONEY LOCUST.—The eminent pharmacist and botanist, Augustine Henry, contributes a valuable paper to the *American Druggist and Pharmaceutical Record* on the Soap trees of China. As our Honey Locust comes in under the section devoted to *Gleditschia*, it is reproduced here as of great interest to our readers :—

3. "*Gleditschia Chinensis*, Baillon, the most esteemed of Chinese soap trees. It occurs in Central China, in the provinces of Hupeh, Szechwan, Anhui, Chekiang and Kiangsi. The fruits are short, thick, brown pods, containing smooth, black seeds, which are figured in *Hanbury, Science Papers*, p. 238, under *Dialium*. The Chinese name is *Fei-tsao* (*i. e.*, fat *Gleditschia*), so called because the pods are much thicker than those of a Gleditschia.

A good number of species of *Gleditschia* occur in Eastern Asia, all of which are soap trees (with the exception of one species), and are known to the Chinese by the same name—*viz.: Tsao-chia* (*i. e.*, black pods), or *Tsao-chio* (*i. e.*, black horns), so called from the peculiar black appearance of the pods. These vary much in size in the different species ; but, as a rule, they are long, black, thin and flat. They are commonly used by the Chinese for washing purposes. There is at present considerable confusion regarding the scientific names of the several species, and a monograph of the whole genus is much to be desired. The list which follows must be regarded as provisional.

4. *Gleditschia sinensis*, Lam. — Occurs at Peking, Ningpo and Shanghai.

5. *Gleditschia macracantha*, *Desf.* — Cultivated in European botanical gardens ; apparently wild only in Szechwan.

6. *Gleditschia heterophylla*, *Bunge.*—Occurs in the northern provinces, Chili and Shantung.

7. *Gleditschia japonica*, *Miq.*—This is the species which occurs in Japan, but perhaps is the common species around Ichang in Hupeh.

8. *Gleditschia australis*, *Hemsley.*—The common species in the province of Kwangtung and met with in Hongkong.

9. *Gleditschia Delavayi*, *Franchet.*—A remarkable species occurring in Yunnan. The pods are 20 inches long, and are occasionally exported to Tonking.

10. *Gleditschia Sp.*—Collected by Ross in Shengking.

11. *Gleditschia Sp.*—Collected by Henry in South Formosa.

All the preceding species have pods, which are utilized for washing, and no doubt could be procured in great quantity, once a trade was started in the article. There remains one species to make the enumeration complete—*viz: Gleditschia officinalis*, *Hemsley*. The pods of this are used as a drug by the Chinese (not as soap) under the name *Ya-tsao* (*i. e.*, tooth gleditschia), so called because they resemble in appearance a boar's tusk ; and in accordance with the doctrine of the signatures they are recommended for use in toothache. This tree was found by me in Szechwan, and does not seem to be widely distributed. The pods, small for a gleditschia, are described in *Hanbury, Science Papers*, p. 248, where they are erroneously ascribed to *Prosopis*."

THE SENTIMENT OF FLOWERS.—The notice, in a recent issue of MEEHANS' MONTHLY, on the effect of flowers in inspiring loving sentiments as exemplified in the Salt Lake Jubilee, has received considerable favorable comment. But the Salt Lakians are not alone in their touch with human nature in this respect. When the recent great Christian Endeavor Convention was held in San Francisco, the comparatively small town of Berkeley put up and sent to meet the visitors no less than 30,000 boquets on one train.

GARLANDS OF ROSES.—During the week preceding England's Royal Jubilee, ten thousand women were employed weaving garlands of roses for decorating houses. What a feast the rose growers must have enjoyed.

PHOTOCOPY OF ORIGINAL

ARMSTRONG & McKELVY	Pittsburgh.
BEYMER-BAUMAN	Pittsburgh.
DAVIS-CHAMBERS	Pittsburgh.
FAHNESTOCK	Pittsburgh.
ANCHOR, ECKSTEIN	Cincinnati.
ATLANTIC, BRADLEY, BROOKLYN, JEWETT, ULSTER, UNION	New York.
SOUTHERN, SHIPMAN	Chicago
COLLIER, MISSOURI, RED SEAL, SOUTHERN	St. Louis.
JOHN T. LEWIS & BROS CO	Philadelphia.
MORLEY	Cleveland.
SALEM	Salem, Mass.
CORNELL	Buffalo.
KENTUCKY	Louisville.

THESE brands of White Lead (see list) are not made by any patent or quick process, but by the "old Dutch" process of slow corrosion. They are the best; are the standard, and have been for years. Protect your interests by making sure the brand is right.

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information and card showing samples of colors free; also cards showing pictures of twelve houses of different designs painted in various styles or combinations of shades forwarded upon application to those intending to paint.

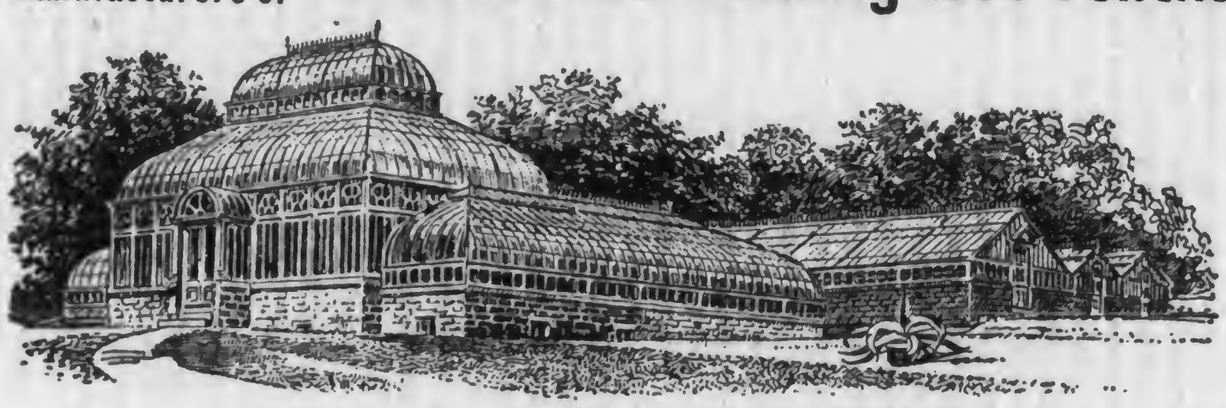
National Lead Co., 1 Broadway, New York.

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for **25c.**

Catalogue free. State for what purpose fertilizer is wanted when writing.

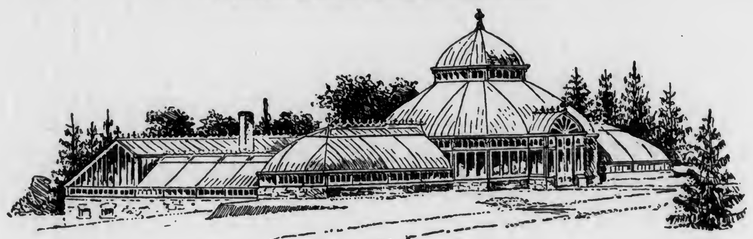
BOWKER FERTILIZER CO., - - - Boston.

Honeysuckles, Akebia, Japan Ivy

and other VINES. Strong plants from pots. They can be planted out at any time during the summer. Write for prices.

THOMAS MEEHAN & SONS, Germantown, Phila.

LORD & BURNHAM CO.
HORTICULTURAL ARCHITECTS AND BUILDERS
STEAM AND HOT WATER HEATING ENGINEERS
Plans and Estimates furnished on application



Largest Builders of Greenhouse Structures. Six Highest Awards at the World's Fair
Send four cents postage for illustrated catalogue
LORD & BURNHAM CO.
ARCHITECTURAL OFFICE, 160 FIFTH AVE., COR. 21st STREET, NEW YORK.
Factory: Irvington-on-Hudson, New York Mention Paper

Landscape Engineering

Plans prepared and carefully carried out for Grading, Roadmaking, Planting and the Remodeling of old places .·. Special arrangements made when extensive work is contemplated .·. Correspondence solicited.

THOMAS MEEHAN & SONS
Nurserymen and Landscape Engineers GERMANTOWN, PHILADELPHIA

EDWARD CAMPBELL
LANDSCAPE ARCHITECT AND ENGINEER
ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. Fine Crushed Stone for Walks and Carriage Drives.

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS. The finest general assortment of Hardy Ornamental Plants in America. Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.
THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

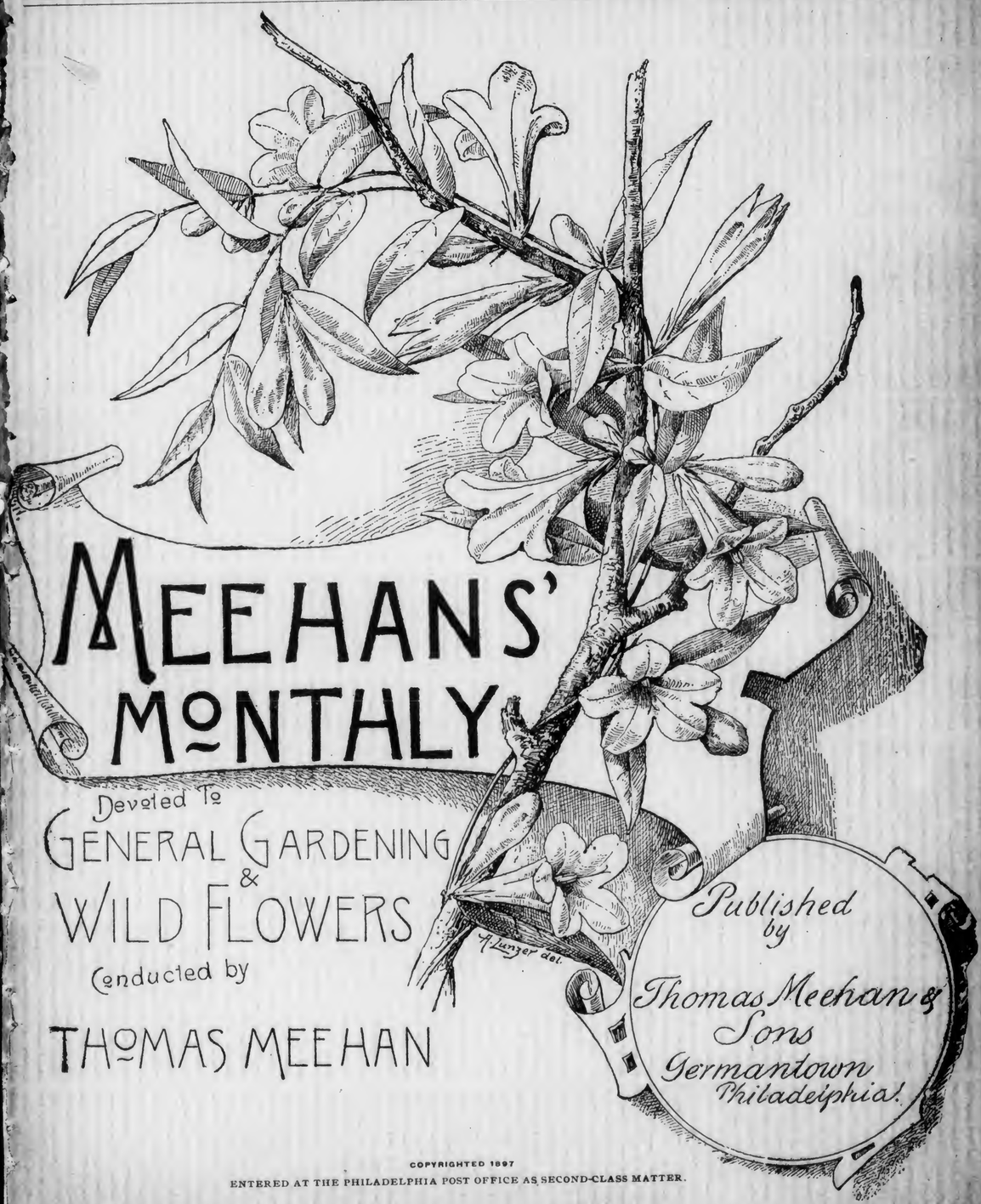
Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without putty. Latest methods of Ventilation, Steam and Hot-Water Heating. Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. Don't fail to get our Plans and Prices.
PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

WHEN WRITING TO ADVERTISERS, PLEASE MENTION MEEHANS' MONTHLY.

VOL. VII OCTOBER, 1897 No. 10

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



MEEHANS' MONTHLY

Devoted To
GENERAL GARDENING
&
WILD FLOWERS
Conducted by
THOMAS MEEHAN

Published by
Thomas Meehan & Sons
Germantown
Philadelphia

COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

NOW IS THE TIME TO PLANT

TULIPS, HYACINTHS, DAFFODILS,

CROCUS, CHINESE LILIES

And all Other SPRING FLOWERING BULBS.

Our Stock and Assortment is one of the most complete in Philadelphia.

Prices Moderate. *Illustrated Catalogue Free.*

MICHELL'S SEED WAREHOUSE,
1018 Market St., Phila.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.

WM. WARNER HARPER, PROPRIETOR

EVANS' IMPROVED

CHALLENGE VENTILATING APPARATUS

Write for Illustrated Catalogue.

QUAKER CITY MACHINE WORKS
Richmond, Ind.

Colorado

offers a charming variety of new and beautiful hardy flowers, suited for the lawn or border. The following list stands foremost as to desirability and easy culture.

2 Clematis, new, climbing sorts	50 cents
2 Clematis, new erect varieties	50 "
3 Rare Colorado Gentians, all different	50 "
4 Evening Primroses, a superb collection	50 "
4 Rare Ferns, fine, hardy sorts	50 "
5 Hardy Cacti (no Opuntias)	50 "
1 Hardy Tree-cactus	50 "
30 Best Colorado Plants, not included above	$2.00
30 Fine Hardy Perennials	2.00
60 Packets rare Colorado Seeds	5.00

These are bargain prices, and no changes or substitutions can be made. All plants are correctly labeled, and sent prepaid on receipt of price. Send in your order to-day.

D. M. ANDREWS
BOULDER, COLORADO

NOVELTIES IN PLANTS, FRUITS, ETC.
A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

TRY DREER'S GARDEN SEEDS

Plants, Bulbs and Requisites.
They are the best at the lowest prices. Calendar for '96 mailed free. Address

HENRY A. DREER,
714 CHESTNUT ST., PHILA.

WALKER'S

EXCELSIOR FERTILIZER

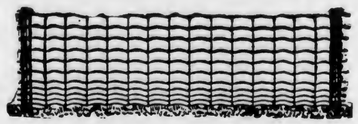
AN ODORLESS, SOLUBLE PLANT FOOD

CONTAINS NO ACIDS OR COLORING MATTER

We will furnish a treatise on "Care of House Plants" and enough plant food for 25 plants for six months for 25 cents, post-paid, and enough for 25 plants for twelve months for 40 cents, post-paid.

We also manufacture an **Odorless Lawn Dressing** and **Fertilizers for Farm Crops.** Write us.

THE WALKER FERTILIZER CO.
CLIFTON SPRINGS, N. Y.



SEE OUR FENCE AT THE FAIRS.

Our exhibit of native wild animals will be found at nearly all State Fairs and will well repay a call. Don't fail to bring the children. What they learn about **Nature** and **Page Fence** will prove of value in years to come.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

POLYGONUM VIRGINIANUM.

Lith. for Meehans' Monthly by L. Prang & Co.

POLYGONUM VIRGINIANUM.

VIRGINIAN POLYGONE.

NATURAL ORDER POLYGONACEÆ.

POLYGONUM VIRGINIANUM, LINNÆUS.—Stem two to three or four feet high, simple, striate-ribbed, hairy above, near the nodes; leaves three to six inches long, lance-ovate, acuminate; petioles one-half to three-quarters of an inch in length; stipules tubular, very hairy, ciliate; raceme twelve to eighteen inches long, simple, spike-like, virgate, slender, sometimes one or two shorter ones from the axils of the upper leaves; flowers greenish-white or often purplish, mostly solitary and distant, a little recurved, conspicuously articulated to short pedicels which proceed from tubular, bristly-ciliate bracts; calyx four-parted; stamens five. Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.

It is a trite remark that we do not perceive the beauty in common things so readily as we see the beauty in those which are rare. Even those who are conscious of the truth of the remark often let beauty pass by without notice, unless some incident draws attention to it. In the case of our Virginian Polygone, it was not selected for a place among the beautiful or interesting wild flowers of the United States until the author met with the following paragraph in the London *Garden*: "*Polygonum Virginianum* is one of our most beautiful summer flowering shrubs, if I may so call it, for it is cut down to the ground like a Phlox in the winter; but it grows quickly into the form of a shrub in summer, and produces shoots from six feet to ten feet long, which are completely covered the whole of the length with little pendant clusters of cream-colored, Spiræa-like flowers. It is a useful, showy plant, and one which should be planted in all shrubberies." In our country no one has ever thought of cultivating it, for in the greater part of the Atlantic United States, where it is abundant, it is passed by in its native wilds with very little attention. Even botanists give it little notice, at least through the whole range of botanical literature scarcely any reference is ever made to anything peculiar about it. If, however, we go to a forest where it abounds—for in Pennsylvania it is only found in half-shaded woods—we find it an essential part of some of the finest forest scenery, and well worthy of a prominent place in the "Flowers and Ferns of the United States." Besides the share it has in producing natural beauty, it will be found a particularly interesting plant in higher botanical studies. It seems to have attracted the attention of lovers of beauty from the earliest times, for it was taken to England for cultivation and figured by the old author Parkinson in his *Theatrum Botanicum*. It was under culture, according to Ray, as early as 1640, and it is recorded as a great favor that a plant was "sent by Edward Morgan to the Cambridge Botanic Garden." These early notices with the character given it by the contributors to the *Garden* as already cited shows how it is appreciated in the Old World. Most of our text-books, Chapman's particularly, refer to the greenish-white flowers of the plant. It might not have so pretty an effect if this were its only shade. But in Pennsylvanian woods, as noted by Darlington, they are "often purplish," and, in the author's experience, plants of the two colors are about equally divided. The plant usually gets possession of most of the ground wherever it grows at all, and very often quite large spaces will seem to be wholly occupied by the plant in very old woods, and the effect under the large trees of the apparent field of white and purple-scarlet spikes is very pretty indeed. The prominent brownish stipules add much to the beauty of the plant when individually examined, and as seen in our representation; but these, of course, are not noticed in the mass of vegetation as found in forest scenery. It is amazing how well it thrives and blooms very often in quite deep shade, and this renders it a very useful plant for what is known to flower culturists as the "Wilderness Garden." How far the graceful little flower spikes and fair proportioned leaves and branches might be made useful by artists, may be worth considering. It surely is as worthy of artistic attention as some of the other forms of "knot-grass," which the poet Keats indicates as in good use in European architecture. In the "Eve of St. Agnes," he leads Madeline into a mansion, and says, among other striking beauties:

COLOR PLATE

POLYGONUM VIRGINIANUM.

VIRGINIAN POLYGONE.

NATURAL ORDER POLYGONACEÆ.

POLYGONUM VIRGINIANUM, LINNÆUS.—Stem two to three or four feet high, simple, striate-ribbed, hairy above, near the nodes; leaves three to six inches long, lance-ovate, acuminate; petioles one-half to three-quarters of an inch in length; stipules tubular, very hairy, ciliate; raceme twelve to eighteen inches long, simple, spike-like, virgate, slender, sometimes one or two shorter ones from the axils of the upper leaves; flowers greenish-white or often purplish, mostly solitary and distant, a little recurved, conspicuously articulated to short pedicels which proceed from tubular, bristly-ciliate bracts; calyx four-parted; stamens five. Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.

It is a trite remark that we do not perceive the beauty in common things so readily as we see the beauty in those which are rare. Even those who are conscious of the truth of the remark often let beauty pass by without notice, unless some incident draws attention to it. In the case of our Virginian Polygone, it was not selected for a place among the beautiful or interesting wild flowers of the United States until the author met with the following paragraph in the London *Garden*: "*Polygonum Virginianum* is one of our most beautiful summer flowering shrubs, if I may so call it, for it is cut down to the ground like a Phlox in the winter; but it grows quickly into the form of a shrub in summer, and produces shoots from six feet to ten feet long, which are completely covered the whole of the length with little pendant clusters of cream-colored, Spiræa-like flowers. It is a useful, showy plant, and one which should be planted in all shrubberies." In our country no one has ever thought of cultivating it, for in the greater part of the Atlantic United States, where it is abundant, it is passed by in its native wilds with very little attention. Even botanists give it little notice, at least through the whole range of botanical literature scarcely any reference is ever made to anything peculiar about it. If, however, we go to a forest where it abounds—for in Pennsylvania it is only found in half-shaded woods—we find it an essential part of some of the finest forest scenery, and well worthy of a prominent place in the "Flowers and Ferns of the United States." Besides the share it has in producing natural beauty, it will be found a particularly interesting plant in higher botanical studies. It seems to have attracted the attention of lovers of beauty from the earliest times, for it was taken to England for cultivation and figured by the old author Parkinson in his *Theatrum Botanicum*. It was under culture, according to Ray, as early as 1640, and it is recorded as a great favor that a plant was "sent by Edward Morgan to the Cambridge Botanic Garden." These early notices with the character given it by the contributors to the *Garden* as already cited shows how it is appreciated in the Old World. Most of our text-books, Chapman's particularly, refer to the greenish-white flowers of the plant. It might not have so pretty an effect if this were its only shade. But in Pennsylvanian woods, as noted by Darlington, they are "often purplish," and, in the author's experience, plants of the two colors are about equally divided. The plant usually gets possession of most of the ground wherever it grows at all, and very often quite large spaces will seem to be wholly occupied by the plant in very old woods, and the effect under the large trees of the apparent field of white and purple-scarlet spikes is very pretty indeed. The prominent brownish stipules add much to the beauty of the plant when individually examined, and as seen in our representation; but these, of course, are not noticed in the mass of vegetation as found in forest scenery. It is amazing how well it thrives and blooms very often in quite deep shade, and this renders it a very useful plant for what is known to flower culturists as the "Wilderness Garden." How far the graceful little flower spikes and fair proportioned leaves and branches might be made useful by artists, may be worth considering. It surely is as worthy of artistic attention as some of the other forms of "knot-grass," which the poet Keats indicates as in good use in European architecture. In the "Eve of St. Agnes," he leads Madeline into a mansion, and says, among other striking beauties:

COLOR PLATE
INTENTIONAL

"A casement high and triple-arched there was,
All garlanded with carven imageries
Of fruits and flowers, and bunches of knot-grass,
And diamonded with panes of quaint device
Innumerable of stains and splendid dyes,
As are the tiger-moth's deep-damask'd wings."

It may be here noted that "knot-grass" is the common name given by American botanists to the whole genus *Polygonum*, simply because the name was made up from common appellation of what is now known as *Polygonum aviculare*, which means many knees, or knots, such as that species particularly has. But, in the olden times, there was a genus known as *Persicaria*—those which have peach-like leaves, which was kept distinct from *Polygonum*, and in those times our plant was a *Persicaria*, and not knot-weed. Linnæus united them making, indeed, one species, *Polygonum Persicaria*, continuing the names as the badge of the union. This is how they all became "knot-weeds," inappropriate as the name may seem to many forms. Our species was known to Morison, Ray and others of those early times, when plants had long descriptive titles, as *Persicaria frutescens maculosa Virginiana*. Linnæus, in reforming botany, so that there should be but two names, that of the genus and the specific one, often used to simply strike out all but one of some popular descriptive title,—and we see here just how the plant got the name from him of *Polygonum Virginiana*. The latter name, says Ray, indicating its place of growth, in those days supposed to be only Virginia. It is now known to grow in most parts of the territory of the United States east of the Mississippi, from Canada to Florida.

Adanson, a French botanist, thought there were distinctions enough to divide it wholly from *Polygonum*,—and he described it as *Tovara*, dedicating it to a Spanish physician and botanist, Simon Tovar, who was a correspondent of Clusius, and raised the seeds which he collected and sent to Spain. Dr. Gray has recently suggested that botanists may yet come to regard it as a good genus, and Adanson's name be retained for it. Rafinesque, in his "Flora of Louisiana," supposed Robin, a French botanist, had collected something very different from this. It had but four stamens, while our plant has five; and Rafinesque says the "calyx is different and also the akene." He described it as a new genus under the name of *Antenovon racemosum*. But no modern botanist has found anything which seems to warrant the distinction. Variation in the number of stamens and pistils is, however, characteristic of the genus, and the "akenes," as Rafinesque calls the seeds, vary when other parts vary. But these variations often occur on the same plant. Three-cornered seeds follow three pistils, and flattened or "lenticular" ones when there are but two. When these are on the same plant, the earlier flowers have the three-cornered seeds. The genus must have been a sore trial to Linnæus when he arranged the classes and orders on the number of stamens and pistils. *Polygonum* he placed in *Octandria* (eight stamens) and order *Digynia* (two pistils); yet, in the face of rules that now decide plants in natural orders, he had to include in it species which he found had but five or six stamens, as well as those with three styles in his *Digynous* order.

The order *Polygonaceæa* is interesting from its being one of the connecting links between those orders which have usually perfect flowers, and those which have the sexes separate in different flowers. The *Rumex*, or genus which includes the docks and sorrel, have sometimes species which have the male and female flowers on separate plants. So far as we know, no such separation has been noted in the genus *Polygonum*, but there seems to be a tendency to separate flowers in this species. The lower flowers seem to be chiefly with vigorous anthers and weakly pistils, and rarely any of these perfect seeds. The upper one almost always seeds when there are two from each axil.

It is singular that, although this species of *Polygonum* stands among so many American species, without any very close relationship to them, like many other plants of the Atlantic United States, it has a compeer, in Japan so nearly like it, that some botanists have considered it scarcely distinct. This species, Thunberg says, is called in that country "Mis-siki," which is the name of a cord used in ceremonies, and which the flower spikes resemble.

EXPLANATION OF THE PLATE.—1. Branch with greenish-white flowers from a wood near Philadelphia. 2. Branch with scarlet-purple flowers from the same wood. 3. A pair of flowers enlarged, showing probable dimorphism in the flowers.

WILD FLOWERS AND NATURE.

OCTOBER.

I love to wander through the woodlands hoary,
In the soft light of an autumnal day,
When Summer gathers up her robes of glory,
And like a dream of beauty glides away.
—SARAH WHITMAN.

GRAFT-HYBRIDS.—H. says:—"I have always admired the conservative caution of the Senior conductor of MEEHANS' MONTHLY as regarding scientific facts—in relating to hybrids especially. People who deal with herbarium specimens generally, and thus get the idea of type from a botanical description, have seldom an idea of the great breadth of variation a species can naturally cover. The variation from the ideal type they have mentally formed, they can only regard as a hybrid. The conductor aforesaid has always shown commendable caution in accepting these crude guesses for absolute facts. But was he not caught napping—for even Jupiter was known to nod sometimes — when he accepted the potato hybrid story as repeated in the magazine for August? It must be noted that it is not the careful, conservative Vilmorin that grafted the potatoes; but that some one named Lefort told him so. In my experience most of these instances are after thoughts. Some thing occurs, and then the observer remembers something that might or might not have happened. I have found red potatoes on the same root-stock with white ones, but I did not, unfortunately 'remember' that I had grafted two kinds. I must have better evidence before I believe in graft-hybrids."

INSECT INDUSTRY.—One never realizes the greatness of Nature's works until he stops to reason. Just look at the cocoon of a moth or butterfly! It is a monument within itself, and yet we would hardly realize it. How many feet of thread are there in a cocoon? As observed in the office of the conductors of this magazine, it was approximated that over a mile of silk thread was in one cocoon. The subject was the caterpillar of the beautiful Cecropia Emperor Moth, and was caught on a Thursday afternoon about 4 o'clock. It started to weave about 9 P.M. on the same day. When observed on the following Saturday morning at 9.45 it was just about finishing. From observation it was averaged that a half-inch of thread was spun per second. From Thursday evening to Saturday morning, 35 hours and 45 minutes had elapsed, making 5362 feet, or 1 mile and 5 rods, of silk spun to make one cocoon. How many miles of silk thread must it take to make a silk dress? When it is remembered that the insect had to manufacture the article as well as spin it, all at the rate of 2½ feet per minute, its industrial activity beats the handiwork of man.

LESTER BERNSTEIN.

HONEY-DEW OF THE LINDEN.—It has not been known until lately that the exudation from leaves of the Linden, particularly in dry seasons, is caused by an insect allied to the plant-louse, which, when in large quantity, resembles manna. The exudation is sweet, like sugar, and often so abundant as to fall in drops to the ground. M. Maquenne has the credit of being the discoverer of the cause of the Honey-dew, which is found not only on lindens but also on maples.

Translated from *La Semaine Horticole*, by Sarah D. Lanning.

This accords with observations made some years ago in America,—with this additional one, that though it is certain Honey-dew is often traced to this cause, it is at times present on leaves when there certainly is no insect to produce it. In these cases it is an undoubted exudation of the leaves themselves.

BEES BORING FLOWERS.—Prof. Muller, who is regarded as one of the closest observers of insects in their relation to flowers, says positively that the bumble-bee of Europe, *Bombus terrestris*, does bore the holes in the flowers, from whence the hive-bee subsequently collect honey.

SUCCULENCE OF SEA-SHORE PLANTS.—In the September MONTHLY, I notice the following: "A correspondent asks a question which has probably never been investigated,—why plants that grow along the sea coast, or in salt marshes, have succulent vegetation in so many instances."

Dr. J. E. Taylor, in his "Flowers, Their Origin, Shapes, Perfumes and Colours," on pages 54 and 55, says: "A large number of plants may be called 'soda-loving,' and these usually abound near sea-coasts. But as we also find them growing over areas underlaid by granite partly composed of soda felspar, as well as inland where brine-springs or salt works abound, we perceive that the chief cause of their being *maritime* is not that there is any mysterious influence exercised over them by the sea, but because such a situation affords them the necessary amount of soda they love. These 'maritime' flowering plants are usually distinguished by the possession of thick and succulent leaves, and these characters may be due in some measure to the absorption of moisture by the salt in the tissues."

FRANK N. TILLINGHAST.

Greenport, N. Y.

This is scarcely an investigation,—merely a supposition which anyone might offer. If the guess made were the real cause, it would be the result of mechanical law, which we have not yet found to have any influence on the constitutional character of plants. If this were all, they would lose their succulence when removed from the richly sodafull conditions. But the succulent purslane remains succulent no matter what are the conditions of its environment.

INSECTS AND FLOWERS.—The London *Journal of Horticulture* says: "Some experiments made in Belgium recently tend to throw doubt on the truth of the assumption that insects are guided to flowers by the brightness of their colors. Brilliantly-colored dahlias were covered so as to show only the discs, and butterflies and bees sought these flowers with the same eagerness and frequency as those which were fully exposed. The conclusion by Plateau was that insects are guided more by their sense of smell than by their perception of the bright colors." Our European friends seem to have been a long time in reaching this conclusion. American botanists have, for many years past, been of the opinion that by far too much is made of the relation which, doubtless, exists to some extent between insects and flowers. Anyone who has carefully observed must have seen that insects visit just as freely and with as much ease as they do the more conspicuous ones, flowers that have no brilliant color or fragrance. While we may safely conclude that, in the plan of Nature, it is arranged that insects should visit flowers for the sake of the nectar, it is not conceivable that this immense mass of sweet secretion should be of no material value to the plant itself. Surely nectar must be of some more value in the economy of the plant than to merely serve as a snare to bait or attract insect visitors.

NEW LOCALITY FOR COREMA CONRADI.—The original locality for *Corema Conradi*, a rare plant, in New Jersey, is on what are known as The Plains. I have never visited this locality, but understand that it is very abundant in some places there, growing with *Arctostaphylos Uva-ursi* and *Hudsonia ericoides*. Last fall I visited a new locality which was discovered by one of my collectors. It was growing in almost pure white sand, with the *Hudsonia*, which it slightly resembles in style of growth. This was in the lower part of Burlington County. A large portion of this locality was destroyed by fire two years ago.

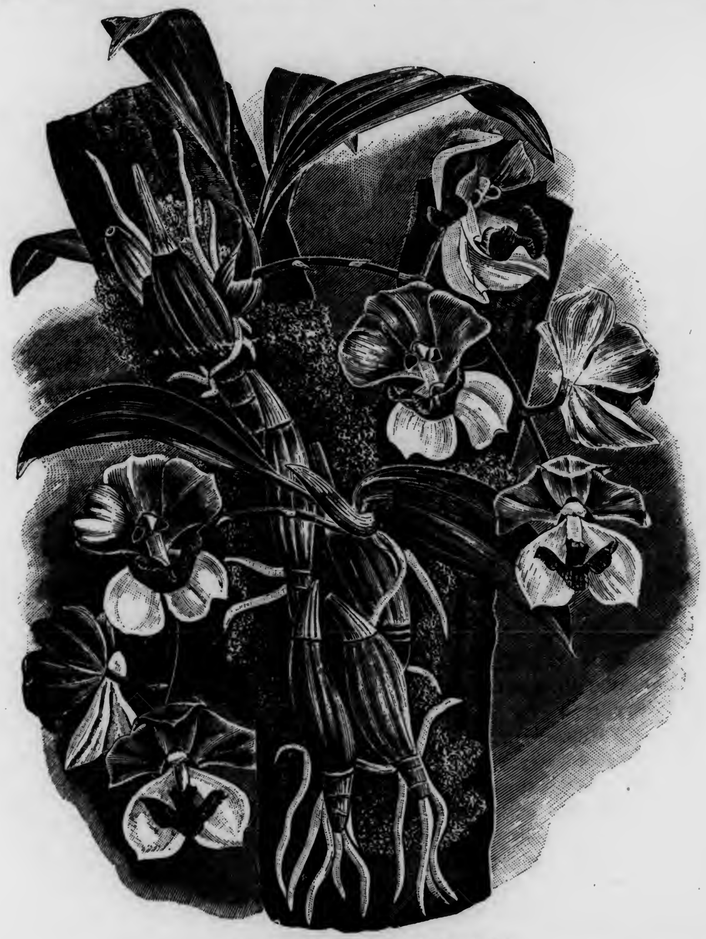
F. L. BASSETT.

Hammonton, N. J.

THE ORIGIN OF THE ALPINE FLORA.—The flora of Alpine regions is so distinct from that of lower altitudes that its origin, on the theory of descent, is a puzzle.

Dr. Maxwell T. Masters says that the origin of the Alpine flora is a matter not yet settled to the satisfaction of philosophers. A migration from the North, in consequence of glacial action, does not account for all the phenomena, for the flora, as a whole, more closely resembles that of the Asiatic Alps than it does that of Scandinavia. The only general conclusion arrived at is, in the words of Mr. Thiselton-Dyer, "that the Alpine flora is a very ancient one, and probably a decaying survivor of one of which the extension was at some former time much more considerable."

CHICORY.—This has become a very common wild flower in many parts of the United States. In former times before coffee-mills were invented, by which consumers could grind their own berries, it was the fashion to purchase coffee already ground. This afforded an admirable chance for adulteration,—and the roots of the Chicory formed the chief ingredient for this kind of adulteration. It seems to have been first imported to this country expressly for this purpose. It has become abundantly wild everywhere. It is not however, a bad weed, being very easily destroyed,—while its beautiful blue blossoms make it very attractive in wild flower scenery. The white blossom variety is very common, as is also a pinkish intermediate between the blue and the white. The roots which furnish the article for the adulteration of the "Arabian berry" are very persistent, and, as in the case of its near neighbor the Dandelion, will sprout out after being cut apart,—but a little perseverance in cutting off the renewed leaves will soon destroy it. No plant can live long if its young leaves are constantly destroyed. The best time of the day to enjoy the beauty of the blue flowers is in the early morning, as the flowers usually close soon after nine o'clock.



ACACALLIS CYANEA.—SEE PAGE 192.

HELONIAS BULLATA.—In a sphagnum swamp, in a pine wood, near Gloucester, N.J., about the roots of magnolias, alders, red maples, hollies, and in company with skunk cabbage and Golden Club, *Helonias bullata* grows in some abundance, and I have lately been interested in watching it coming out of winter quarters. The leaves of the plant persist through the winter, and on April 10th, the date of my first visit to the bog, they lay flat on the ground, arranged rosette-fashion and beautifully crimsoned. Some of the plants were beginning to send up flower stalks—the tight, round balls of undeveloped buds, just emerging from the center of the circle of old leaves, reminding one of babies' bald heads. At the height of a couple of inches, the stalks, in appearance, are not unlike asparagus shoots, both from the similarity of the heads in each and the pointed, white bracts disposed at intervals down the stalk. The expansion of the Helonias' head and swelling of the buds, brightening in color as they grow, soon cause the likeness to disappear, however. On the early date just mentioned, I found one head, on one side of which the flowers were already opening, showing the steel-blue anthers, which, against the pink-purple background of the perianth, give the flower such a striking appearance.

On April 17th, a week later, the recesses of the bog were fairly aglow with the plants in full bloom—their heads of flowers flaming like candles here and there, the stalks in some cases standing singly, and sometimes three or four in close proximity. The air was quite fragrant with their perfume. In some places last year's leaves formed extensive mats upon the ground, and, stooping to examine the leafy shoots of the season, which were just pushing up from amidst the old foliage, I was interested to note that the plant spreads by creeping root stocks. This feature I do not find mentioned in any of the books I have seen; indeed, the illustration in Britton and Brown's new Flora gives the idea of a bulbous root. Such a character was not apparent in any of the plants I examined, but, when growing singly, were found with the thick root stock represented in the drawing in Volume I. of "The Native Flowers and Ferns of the United States." One does not like to root out rare plants indiscriminately, so I did not continue my underground investigations further than to bring up a specimen with four distinct plants from the same root stock. The root stock was not deep, but kept close to the surface; but the long roots from it sank deep into the muck of the marsh. C. F. SAUNDERS.

Philadelphia.

INJURIOUS FUNGUSES.—Those who have made a study of the lower orders of the vegetable kingdom tell us that of the large group of mushrooms, which includes a multitude of species, only a very few are poisonous. Unfortunately ignorance of this class of vegetables is so profound that few are able to distinguish one species from another, and hence we make use of the one species with which we are so familiar, and in some cases with the common puff ball. The fact remains, however, that a very large majority are beneficial to mankind. This is also true of the more minute classes of the vegetable kingdom known as bacteria. There seems to be no end to the number of species which those who make a study of them are continually discovering and naming; and yet it is as true of this class as among the mushrooms that only a very small percentage are injurious, while a vast majority are beneficial to mankind. It is amusing, if the results were not so serious, to read the accounts in daily papers and magazines, which should know better, as to the awful light in which we should look at these minute organisms. The very name bacterium is used to frighten people into all sorts of expensive and useless measures. To read—as we all do almost daily, of the evil doings of bacteria, one may feel a surprise that there is a living being on the earth.

STRANGE FORMS IN TREES.—Mr. John Fraser, Huntsville, Ala., writes: "I was at the Chalybeate Spring on Sharp's Mountain, near here, some time back, and noticed an oak which closely resembled the Deer's-head Oak you illustrated some time ago. On my return I met old Col. Tom Hewlett, who, on learning where I had been, asked me if I noticed a bent oak near the Spring. I told him I had. He then told me that when hunting in that neighborhood they always hung their game on that tree when camping at the Spring; that scores of deer and bear had helped to lean the tree."

COLOR IN RELATION TO CLEISTOGAMY.—Although we have always been taught that the cross-fertilization of plants produces stronger and better offspring, it is a pretty generally accepted theory that some plants do much better by producing cleistogamous, or apetalous, self-fertilized flowers. The saving of pollen to the plant is cited as evidence. In some cleistogamous flowers, only one hundred grains of pollen are produced, yet an abundance of seeds are ripened; while, in the showy blossoms of the same plant, hundreds of thousands of pollen grains may be formed and no seed result. In fact, this has gone so far, in certain families, that the production of seed, by cleistogamous flowers, and the failure to do so by the showy ones, is now the rule. Here we seem to have the axiom that cross-fertilization is good for some families, and self-fertilization best for others!

In the genus *Viola*, however, a family noted for its cleistogamous flowers, certain circumstances seem to point to a reason for such flowers, other than a desire for self-fertilization. Nearly all plants of this genus, in the northern States are lovers of coolness and moisture. They are found in swamps, wet woodlands, ravines and along streams. Nearly all, too, bear their showy flowers in spring and early summer, the cleistogamous ones being produced during the heated term. Curiously enough, as soon as the warmth has passed, these same plants begin producing showy flowers again. Every autumn, one may look for blossoms of the white, common blue, Dog and Arrow-leaved violets and be sure of finding them, while several other species are nearly as sure to bloom. By carefully watching the Dog violet, one may see that the showy flowers are not a sudden departure from the other kind, but *are made from* the *cleistogamous ones!* First, one or two small petals are added, in the next later blossoms more and showier ones appear, until at last we have showy ones again.

THE GREEN CHINA ROSE.—SEE PAGE 193.

It seems to be a pretty well substantiated fact, that the colors of flowers often play an important part in turning the light of the sun into heat and energy. That blue may have a large share in this work, is hinted by the prevalence of this color in early spring and late autumn, when warmth is needed, and its comparative absence in summer. Should this prove to be true, there seems the best of reasons for concluding that the *blue* petals of our common violets are put on, not for attracting insects *per se*, but to aid the plant in its work. This would indicate that the violets are naturally self-fertilized. There seems to be no good reason why cleistogamous flowers should not be borne early in the season, with, or before, the showy ones, for then, if ever, these plants should need such means of propagation. But this is just the season when such flowers are missing. Those who cultivate the violets in winter know that they thrive best in cold, and demand this temperature to produce the best blossoms. Here, again, we have coldness and showy blossoms associated. I may have constructed a theory from several coincidences, but if so should be pleased to have my fellow-botanists set me right. We have to unlearn as well as learn.

WILLARD N. CLUTE.

Binghamton, N. Y.

THE SWEET BUG AND WATER SPIDER.—These insects I have been familiar with from my youth up, but have never seen nor heard their scientific names. They are always found in small streams, ponds and water holes, generally together, yet very often separate. They are not akin and are not at all alike. They have the happy faculty of rowing themselves over the surface of the water with amazing swiftness and ease. The Sweet Bug is jet black and glossy, hardly an inch long, oval in shape with very short legs, yet it rows itself rapidly in circles or straight ahead. I have often caught them in my hand and they exhale a sweet fragrance. They are gregarious in their habits, and little knots and groups are found together circling around on the surface of the quiet pools.

The Water Spider is another sort of a craft. It has long legs somewhat like the Daddy-long-legs and has feet which allow them to hold on to the water to force themselves ahead. It is often found solitary in the little streams and again in two's and three's and sometimes in a dozen or more where the receding waters have left only water holes here and there. In color it is a dark gray with white spots on its sides, and its skin is hard to the touch as if it were really a coat of mail. They are very nimble and can jump from point to point as well as row themselves backwards and forwards. These insects must have, at some portion of their lives, wings, for they are found in places which have no communication with running water. I have found the Sweet Bug in cisterns and in water holes far from other bodies of water. L. K. STEELE.

Festus, Mo.

The Water Spider is known in classification as *Argyronema aquatica*. It is indeed a remarkable insect. It builds an inverted nest under the leaves and under water, and then brings mouthfuls of air, and fills the bag. In this way it lives under water, and yet with plenty of air around it.

BOTANY OF THE CHILCOOT PASS.—So much is appearing in the papers of the day, that the writer is forcibly reminded of a botanical trip made up the Lynn Channel to the mouth of this famous pass, some fifteen years ago. His companions were bent on a long tramp to the Davidson Glacier,—while he prefered to make collections at the mouth of the Pass. At that time, it was but an Indian trail. Mud and slush from the melting snow above, made the rocks too slippery to climb by the feet alone, and hand-grasped underbrush, had to lend a hand. Brought down by the slime from some higher elevation were red berries of a Mountain Ash. They were little larger than Elder-berries, and furnished a strong inducement to climb the trail to discover the tree that bore them. The first branch grasped to help the ascent proved to be the common Red Maple of our Eastern States. It was a matter of surprise to find an old friend so far from home. Getting up a little further, a birch had to do the hand-service. The leaves were woolly and heart-shaped, and to this day, it has not been definitely placed with any described species. The climb was becoming disgusting even to an ardent botanical collector, and the "last straw which broke the camels back" arrived in the shape of a slide-down, and a stumble over a mass of *Fatzia horrida*, the rope-like stems of which, covered with thorns, would shame its cousin, the terrible Devil's Club (*Aralia spinosa*) of the Eastern States. Concluding that the Mountain Ash, could only be *Sorbus microcarpa*, the further investigation of the Chilcoot Pass were indefinitely postponed. We called it, by the way, Chilkat in those days. It was thought better to explore the shore line for further interesting plants. Disappointed botanists, like crying children, are soon comforted. Nearby, in a group of alders, was found a rare root parasite, closely related to the *Conopholis* or squaw-root, recently described by Mr. Jellett in MEEHANS' MONTHLY. The Chilcoot Pass was then given a receipt in full for its pleasures. The parasite was *Boschniakia glabra*. An Indian, who was found manufacturing a dug-out from an Alder trunk, took the plant collector for a "doctin," which was his English for doctor. He said that the parasite was "Cultash," which was carefully noted in the field book as the Indian name for the plant, only to find subsequently that the Indian meant that it was no good for medicine.

Altogether the writer feels there is good botanical pasturage along the Chilcoot trail, and if anyone with proper proclivities on the journey to the gold fields can spare a moment from the struggle for life, to take a bite at botany, it would be a good thing to do.

GENERAL GARDENING.

THE APPLE TREE BY THE MILL.

O'er the oily smooth mill head,
There hung the apples growing red;
And many an ancient apple tree
Within the orchard could he see;
While the smooth mill-walls white and black,
Shook to the great wheels' measured clack,
And grumble of the gear within.
While o'er the roof that dulled that din,
The doves sat cooing half the day,
And round the half-cut stack of hay,
The sparrows fluttered twittering.

—WILLIAM MORRIS.

BLUE HORTENSIAS.—A letter by A. de Candolle about blue Hortensias. "Although so long ago as twenty-five years, still we do not hesitate in reproducing it," says *La Semaine Horticole*.

GENEVA, February 22nd, 1872.

"*Sir*:—In *L'Illustration Horticole* of July, 1871, I read with interest your article about the blue color of some Hortensias. In support of the idea that the color blue would add to the strength of the plant, I will cite a fact the truth of which I assured myself last year. I was upon the borders of Lake Bnajeur, and I saw in all the villas of this admirable country, magnificent blue Hortensias in open ground. I asked different gardeners what they did to make them thus, they all assured me they did nothing. The stocks are put in thickets and groves, and along shady avenues where they flower blue without any artificial means whatever. I never observed anything particular in the soil of Stresa where I resided, nor on the Island of Borromées. In the latter place a gardener told me a very curious thing, that certain years Hortensias are sometimes pink. Since the same root presented this variation, it must be something foreign to the soil. Probably some years the climate being less favorable than usual, the species suffered a little and became pink. The blue Hortensias that I saw in 1871 had a superb foliage. The soil is just dry enough, drained naturally because of the slope. The neighboring hillsides are covered with chestnut trees, and the detritus is very favorable for Hortensia vegetation.

"You may make use of this small information if it pleases you. As for myself, I am glad to have had the opportunity of addressing you, etc. Believe me, etc.,

"A. DE CANDOLLE."

Translated by Sarah D. Lanning.

The experience of Professor A. de Candolle, so long since, is the experience of good observers to-day. A comparatively vigorous growth is always noted in connection with blue Hydrangeas, as we term the French Hortensias here,—and a less vigorous with the rose color,—while Thomas Hogg, a very slender grower, usually white, becomes rosy on extra strong plants.

ABNORMAL TULIP BULBS.—A correspondent sends us a specimen of a tulip, which has made an elongated stem, with a number of leaves along the usual flower stalk. In the axid of these leaves there are well-developed tulip bulbs. This is not usual, and yet it is occasionally seen in other bulbous plants, especially in lilies. One species of lily is known as *Lilium bulbiferum*, on account of the numerous bulblets which are produced in this way. Possibly bulbs that have leaves on the flower stalk would bear these bulblets under certain conditions. It is not uncommon, in these cases, to pinch off the flower buds before they expand, with the result of having small bulblets at the base of the leaves, when it is desired to propagate kinds rapidly.

LARGE REDWOOD.—Some of the large Redwoods rival the mammoth Sequoias in size. Miss Alice Eastwood tells *Erythea* that there is a tree in Willow Creek Canon that is 12 feet in diameter. This would be more than 36 feet in circumference. At the average rate of aunual growth in these trees, computed from numerous observations, the age of this tree would be five hundred and seventy-six years.

TURNIPS AS A LAND FERTILIZER.—I note that Mr. Burnett Landreth prefers turnips for ploughing under as a green manure in preference to clover. I should think that the land would be already in pretty good condition that would raise a crop of turnips. I could never get turnips to do well in run-down ground. Besides, the turnip does not grow rapidly till frost is close at hand, and we generally desire to plough down the green crop for manure before that time. Perhaps Mr. Landreth's method has not been made clear. R. B.

INSECT BRUSHES.—A very useful implement for cleaning plants from insects, is the spring

brush. It is common in the Old World. If it is in use in our country, it has avoided general notice. The accompanying sketch explains its nature.

SILICATES AS MANURE.—Error, when once published as truth, is extremely difficult to revoke. The skeletons of dead theories and unfortunate teaching continue to walk about like living forms, deceiving the world long after their natural lifetime and supposed interment in their last resting place. Forms clothed with flesh are easily killed; but their ghosts are invulnerable. A great responsibility, therefore, rests upon the investigator and scientific teacher. A single hasty conclusion, or a wrong statement, if sent out as *truth*, may cost the world thousands—yes millions—of money before it has run its course just as a single bit of new and real truth may benefit it to a like extent.

A few days since, in consulting the volume of MEEHANS' MONTHLY for 1896, on page 54, I chanced upon the note from some correspondent asking about the value of silicates as manure; where such fertilizers could be obtained; and suggesting that, if fed to chrysanthemums, silex might be valuable for giving strength and rigidity to the stems. "Scientists (says this correspondent alluding to the diatomaceous earth formerly used to adulterate fertilizers) say that these small fossil skeletons, of many shapes—stars, rings, discs, etc.—form to a great extent the outer coating of wheat, rye, etc.; that experiments have been made, where this, or rather a diatomaceous earth, had been used,—that the macerated straw under a microscope showed the diatoms (in the straw) unchanged in form."

This, I may say at once, is mere nonsense. It is one of those ghosts which in the flesh once paraded itself as science; and which, by an accident, got before the world through the scientific press.

Some years ago, as your correspondent mentions, a fertilizer composed of infusorial earth and phosphate was on the market; and it is said to have even been patented. It was considered especially valuable (by those who believed in it) as a fertilizer for such crops as wheat, rye, etc.

It happened that, shortly before, a man examined with a microscope the straw of wheat which had been fertilized with silicated potash. The straw was prepared for microscopic examination by maceration in nitric acid. To the surprise and delight of the gentleman, he discovered in the walls of the straw, great numbers of what he took to be the silica skeletons of diatoms. There were numerous forms; and he thought he could make out no less than twenty different species. He at once concluded that they had been taken in bodily from the soil by the roots of the wheat. He was enthusiastic and considered it the greatest discovery of his life. An account of the matter was forthwith prepared and sent to one of the leading scientific journals. In the absence of the editor, and by some carelessness or oversight, the same was published. The editor, when he saw the issue of the journal, at once spotted the article as a piece of the sheerest nonsense; but it was too late. The character of the journal was authoritive, and other papers copied the communication bodily and without comments, even in Europe. A fertilizer composed largely of infusorial earth was placed on the market, and doubtless many a man with fields of sand neglected his own resources to purchase the article in a fancier form and under the more dignified name of infusorial earth.

ERNEST WALKER.

New Albany, Ind.

CULTURE OF LAPAGERIÆ, in the planthouses of Hofmar-schall Von St. Paul, in Sischbach (Germany). Lapagerias are distinct cold house plants, in which they will thrive under a temperature of +4 to 6 Reamur = 41 to 45.5 Fahrenheit—and produce luxuriant foilage and rich splendor of flowers. Admitting the fact, that plants ought to be treated in accordance with their original habits, it is best to plant Lapagerias in *the ground* of a span-roofed house. A good soil, consisting of leafmould and peat, a liberal addition of sand and some old loam, spread over a layer of drainage, is requisite for a profuse development of the plants. When they show new growth, manuring should be given; in the beginning sparingly—later on more liberally, and surprising results will follow.

During clear and pleasant weather in spring and summer, abundant airing and daily spraying should not be overlooked. During light, warm rains, the temporary removal of overhead sashes will prove advantageous, but at all times, direct sunshine should be avoided by shading—as the young shoots would suffer. Under this treatment, thrips, spiders and leaf-lice will hardly ever be noticed.

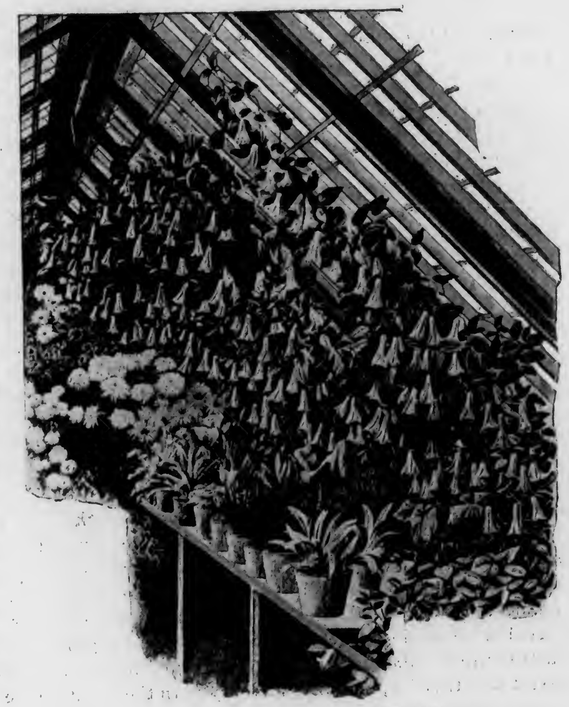
L. rosea L. alba and *L. Chadworthi* are cultivated in our house, covering a glass space of ten square meters. At the end of October, over 500 open flowers were counted, and the whole number during the season, certainly amounted to over 1000.

For cutting purposes, *L. rosea* and *L. alba* are the most suitable. *L. alba* flowers less abundant than the *L. rosea*; but the splendid white flowers are always admired in bouquets and wreaths—and well paid for.

Propagation is best accomplished by slips or seed; root cuttings rarely succeed. Seedlings differ frequently from the mother plant, owing to the rarity of good germinating quality. The difficult propagation may be the cause of the rarity of Lapagerias in gardens or cold-houses, but their exquisite beauty will amply repay trouble and attention required.

FRANZ SUCKENBACHE,
Head Gardener.

We have had this interesting article from Muller's German *Garten-Zeitung*, translated in order to call the attention of the lovers of cut flowers to its possible desirability for us, in this beautiful branch of gardening. We are very limited in variety, After the rose, carnation, violet and "Smilax" (*Myrsiphyllum asparagoides*), and some orchids have been named, we have little left in a general way. One thing is that Americans can not take the time to put artificial stems to flowers. The Lapageria stems would be too short for general purposes. But the leaves are almost as leathery as "Smilax" leaves, and for spray work nothing could excel the beauty of a branch of Lapageria, with its shining green leaves, and lily-like flowers. It is certainly worth thinking about by the leaders in cut flower affairs.



LAPAGERIAS.

AMMONIA IN PLANT CULTURE.—While the ordinary Kerosene Emulsion and solution of Copper have proved an immense boon to the cultivator of fruits and trees in the open air, they are usually objectionable to the small amateur flower grower, to whom something clean and easily applied to small plants is a greater advantage. For these, the various insecticides and fungicides for sale by the florists offer some good recommendation. Where these are not to be had, it is said that a wash of ammonia is effective. As the ammonia bottle is now one of the supplies of every well-ordered household, it may be put into use readily. All these articles, however, require some little care in their first application. One should always try a little at first on some plants that are of no considerable value, before risking them in a wholesale way. For instance, the scale on orange leaves and the leaves of oleanders, or the leaves of some similar plant affected with any kind of insect, can be tried first. If no injury follows, then it may be applied on a somewhat more extensive scale. A few plants and a brush to paint with, a considerable quantity can be gone over in a short time.

A GOOD WORD FOR THE ENGLISH SPARROW.—I have never been a friend of the English sparrow, and have mourned their appearance at Egandale. But we must give his Satanic Majesty his due, and speak of the good qualities of this sparrow also. For the past few days, these birds have been on my lawn in flocks eating the seed of that rascally pest the Wirri-Grass-Crab-Grass. While not desiring their perpetual presence, I am open to consignments large and small from now until frost. W. C. EGAN.

Highland Park.

And yet it may be doubted whether there will be one blade less of the crab-grass on Mr. Egan's lawn next year! Our good minister was telling us recently about the danger of giving Satan any encouragement at all. He said that Wesley's doctrine to let him help push our carts up the hill if his majesty so minded, was a very dangerous one from the fact that he would not let go when we had no further use for his brilliant services; and the result was that he generally ran away with the whole establishment!

FOURCROYA GIGANTEA.—The sentiment is often heard expressed, that one-half of the world does not know what the other half is doing; and this is as true of the nursery-world as of the rest of it. Chance brings before us the catalogue of an East Indian nursery, and among the testimonials is the following: "I received the 1,000,000 *Fourcroya gigantea* which you sent; plants arrived in good condition. Ship me 500,000 more, for which please find draft enclosed." When it is remembered that the *Fourcroya gigantea* is a large, coarse, sub-succulent plant, one may well wonder what sort of a world it is that would require 1,500,000 plants by a single purchaser:—or what sort of a nursery it could be that would be able to furnish so many.

WILD ROSES.—In some large gardens, a good point is often made by having a collection of different varieties of species of the same thing. They do, indeed, give a great deal of pleasure to those whose tastes run in this direction. One of the most interesting, as well as one of the most satisfactory in many respects, is a collection of single, wild roses. In respect to the odor of roses, they form a singular exception to most families of plants. In large families, as a general rule, only one or two species of the genus are sweet-scented. There are not many sweet-scented violets, although the species are numerous,—nor of the Reseda, to which the mignonette belongs. Of the many hundreds of Begonias, scented varieties are very rare; but in the rose family, a species without fragrance is a singular exception.

NEW OR RARE PLANTS.

ACACALLIS CYANEA.—The changes in plant names made necessary by botanical rules which probably would never have been adopted had their original promoters foreseen that they would lead to a greater confusion than they were attempting to avoid, is worrying the orchid grower as well as the lovers of flowers in other departments of gardening. Some glowing accounts occur of a beautiful Brazilian orchid named *Acacallis cyanea*, which turns out to be our old favorite *Aganisia cyanea*, which was widely distributed several years ago by Lucius Linden, of Brussels, Belgium. The illustration on page 185 is only one-fourth of the natural size. The plant received its name of *Acacallis* from Dr. Lindley in 1853. It was renamed *Aganisia* by Reichenbach in 1870, not regarding Lindley's genus as a good one. This decision is now reversed. As the name has not entered extensively into garden literature, it is easily corrected.

It may here be noted as a hint to orchid growers that moss is often placed over the roots of the plant on the block.

Epiphytal orchids are essentially air plants. The only use of the moss is to retain some water, so as to assist in making a moist atmosphere which is the delight of this class of orchids. Whenever orchid roots can get clear of the moss or material with which mistaken kindness covers them, it is wonderful to note how rapidly they run over the block.

MEEHAN CUT-LEAVED PLUM.—Some years ago, a variety of the Myrobalan Plum appeared in a lot of seedlings, that had leaves cut as fine as some ferns. It was propagated and distributed as Meehan Cut-leaved Plum. A remarkable peculiarity was that the tree produces branches with the normal Myrobalan leaves in about the same proportion as those with the fern-like leaves.

A correspondent states, that another remarkable peculiarity is that the branches with normal leaves produce flowers and fruit abundantly; while those with the fern-like leaves never produce any. This sterility in connection with the highly dissected leaves is a very novel and interesting point, and it would be well for those interested in nature studies to see whether this comparative sterility is a general characteristic of the so-called cut-leaved varieties.

MUSA COCCINEA.—Although long known to cultivators, it is rare to see in collections of to-day *Musa coccinea*, the scarlet flowered species, from Cochin China. It was therefore, a treat to see this plant nicely in flower in the conservatory of Mr. John T. Morris, Compton, Chestnut Hill, Philadelphia. This beautiful species is a comparatively dwarf grower, making but a height of stem of about four feet. Its inflorescence is terminal, in a spathe of about a foot in length, with flowers of a brilliant scarlet, tipped with yellow. This species will thrive in less heat than many other kinds require.

Mr. Morris delights in gathering together uncommon plants, and many others besides this *Musa* are to be found in his collection.

JOSEPH MEEHAN.

THE GREEN CHINA ROSE.—The truth of the old saying, that circumstances alter cases, is often evident in flower growing as in other situations in life. Some half a century ago the China Rose with green flowers was grown here and there as a curiosity, the gardener, however, hating to give it house room. Still the fact that instead of producing petals, it gave us only a mass of green fern-like leaves, always interested the lovers of the curious in nature, see cut page 187.

In these days, however, no arrangement of cut flowers is regarded as perfect unless some green is prominent among the brighter colors,—and the green rose, with its beautifully arranged petals, comes in exquisitely in certain cases. The *Lyon Horticole* says that among the French florists it is coming to be one of the essentials of the cut flower trade. It is being grown to some extent by our own florists; but will probably yet achieve a higher place than it at present occupies. It seems strange that a plant that florists were once glad to get rid of, should now take such a successful leap in the temple of Flora.

CARYOPTERIS MASTACANTHUS.—The remarkably beautiful small shrub *Caryopteris Mastacanthus*, which for its lovely blue flowers in summer is in so much request for garden ornamentation, is a native of China, and was described by Endlicher as a new genus under the name of *Mastacanthus*. Subsequent botanists did not consider it different from the older genus of Bunge, *Caryopteris*, but retained the generic name as its specific denomination. This is the reason *Mastacanthus* commences with a capital, to indicate that it was originally a generic name before it had to do duty as an adjective. It is hardy over a large-extent territory, though as far northwest as Chicago, it kills to the ground in winter. A correspondent in that section takes it up with what earth will adhere to its roots, and places them in a cellar as one would a hydrangea, and, it

does not seem to suffer from the replanting in spring. As he well remarks, its beauty is well worth this extra trouble.

It is probably that even where it is killed to the ground, it would still push up and bloom freely as does its pretty neighbor of the same verbenaceous family, the chaste shrub, *Vitex Agnus Castus*, a pretty shrub, by the way, that has not the appreciation it deserves.

THE TUPELO TREE.—One of the rarest trees in ornamental gardens is the Tupelo Tree,—botanically, *Nyssa sylvatica*. Few trees can compare with this in rich autumn coloring, and the form of the tree is generally beautiful. In summer time, the rich, glossy, green leaves would make a beholder believe himself to be in an orange grove. It is rare because of the belief that it is difficult to transplant; but, in our experience, we find it no more difficult, when nursery-raised trees are employed, than the majority of trees. The same objection was made, a few years ago, to the use of oaks; but experience has shown, that when intelligently planted, nursery-raised oaks or the Tupelo Tree are about as safe as maples or poplars would be.

THE HARDY FLOWER GARDEN.

FALL PLANTING OF PERENNIALS.—Amateurs in gardening naturally feel some hesitancy about transplanting herbaceous plants in the fall; there is an uncertainty that is only dispelled by the results of experience. Those plants that are understood to be perfectly hardy have but one thing to fear, viz: the continual upheaval of the soil in the action of freezing and thawing. Their roots are not damaged by being frozen so long as they remain unexposed to air and light, that thawing may take place gradually.

Dealers occasionally receive boxes of plants that have been "caught" en route by severe weather. On opening the box the presence of frost is at once noted, and instead of unpacking the goods, the lid is closed and the whole thing placed in a shelter devoid of artificial heat, yet sufficiently mild to permit of a gradual thawing of the frozen contents. In a few days time the plants, uninjured, may be removed. If, on the other hand, they had been at once removed and exposed to a rapid process of thawing by heat, they would almost certainly be seriously injured.

It is a similar case when shallow-rooted plants are "thrown up" by the continual freezing and thawing in the soil, finally becoming partly exposed to the air and sun-heat. Then it is that the damage is done.

Mulching is a perfect safeguard. The roots are placed further from the reach of frost and sun-heat, resulting in a more even temperature.

The choice of material to use for mulching is greatly a matter of convenience. Stable manure containing plenty of straw is perhaps the most generally used for the purpose. Dried leaves weighted down by boughs of trees are excellent; corn-fodder is likewise used. The transplanting of most plants may take place in any fall month, though an early one is preferred, with a few exceptions, as they become better established before winter weather sets in.

ORNAMENTAL FOLIAGE PLANTS. — It is almost as desirable that the herbaceous garden should contain beautiful foliage plants as that flowering plants should be included. In this connection the writer is reminded of the thalictrums, the foliage of which may be said to resemble the maiden-hair fern. Their flowers are, as a rule, inconspicuous and useless; but a variety known as *Thalictrum roseum* is an exception, and quite worthy of notice, its rose-colored flowers appearing in May and June. *T. nutans* and *T. F'endleri* have very fine foliage.

Poterium Sanguisorba is another with attractive pinnate foliage, the leaflets being deeply serrate. It spreads close to the ground in a perfect circular form, and is altogether distinct in its growth. The flowers are small, in close heads or spikes, and though rather inconspicuous, are somewhat interesting on close examination. The green color of the calyx (petals being absent) predominates; but the upper flowers are graced by tufted pistils of a deep pink color. This is the Burnet of herb gardens, being cultivated, though not extensively, for salads.

The pinnate leaves of *Polemonium cæruleum* are graceful in their fern-like growth, all those of the first year's producing rising direct from the roots and slightly curling outwardly. Unfortunately, it is only a biennial; but it will give considerable pleasure in its time, nevertheless. The second year of its existence it sends up a cluster of shoots, about 2 feet in height, each branching into a corymbous panicle of large, blue flowers. Should the foliage alone be desired, its life could probably be prolonged by pinching out the flower shoots as they appear.

Ægopodium Podagraria variegata carries its variegation perfectly throughout the entire season—an unusual character in many variegated-leaved plants,—making a low, dense clump of foliage from which arise the comparatively valueless flowers.

Santolina incana, a European plant, with fine, dense, silver-colored foliage and stems, producing yellow composite, rayless flowers, is very attractive. The growth emits a pleasant, aromatic odor.

Pæonia tenuifolia has very fine, pinnatisect leaves, with no resemblance, to the ordinary eye, to a pæony. It produces small, single, brightest crimson flowers in early spring.

BOLTONIAS FOR CUTTING.—One of the chief advantages in the flower-garden with its successional flowerings is in its being a source of abundant supply for vases in the house. Two of the best perennials for this purpose are *Boltonia latisquama* and *B. glastifolia*. The flowers are aster-like in appearance, the former light purple and the latter white; of fair size, and borne in profusion in large, open panicles. When cut and placed in water they last a long time, and make a very effective display.

PÆONY CULTURE.—"It is generally believed that pæonies are out-of-date, and not worth care,—in fact, one forgets to water them during the heat of July and August. This oversight is very prejudicial to the roots," says *Lyon-Horticole*. "In light soil, water is really necessary. It is easily seen that if the stalk and leaves are resting, it is not the same with the roots. It is just at this time of the year that the roots are most actively at work. In one month, the flowers dispense all the strength and vigor the roots have stored up in the year. To remedy this, a certain quantity of compost should be added to the water-rings."—Translated from *La Semaine Horticole*, by Sarah D. Lanning.

FRUITS AND VEGETABLES.

PROFITABLE STRAWBERRY GROWING.—Mr. G. G. James, of Exeter, Missouri, says that the attribute of a successful strawberry grower is to make as much profit from an acre of land as the fellow across the way does from four acres.

THE JAPANESE PLUM.—The Japanese Plum has been widely tested in California; but the *California Fruit Grower* is not over enthusiastic as to its future prospects. It believes that the old European race of plums will be popular when the Japanese has become only a part of fruit history.

IMPROVEMENT IN HARDINESS.—The ability to resist freezing or very low degrees of temperature is evidently constitutional. It is part of the law of the individual as it exists. No amount of treatment would induce a change from this constitutional character. A plant which could not resist freezing ages ago, would not resist it to-day. Potato, tomato, egg-plant and scores of others which to-day are killed by the first white frost, will equally suffer ages hence. No selection of hardy plants, no change in climate or conditions will avoid this certain doom. But the constitutional hardiness of any plant is subject to a slight variation just as much as is every other characteristic of the plant. In the hardiness of plants there may be a variation of a degree or so, or part of a degree. One plant of any given species may be killed with the first very light white frost, while a neighboring individual of the same species may escape; but the following attack of frost a trifle more severe than the other will carry off the one which had this slight surperiority as well as the one which succumbed earlier. This additional, though limited, resisting power can often be aided by the cultivator. As generally cultivated in gardens, fruits and vegetables have deteriorated in resisting power. The practices of the cultivator are frequently at variance with the order of nature. Increasing succulence of plants, the size of the fruit, or other characteristics valued by the gardener is frequently at the expense of general hardiness. We can remedy these short comings. It is in this line that the cultivator proceeds in

the cultivation of the peach. For instance, seed from trees that have never been grafted give an advantage to the kind which is grafted on it. So with the orange, the wild, sour species is preferred by the orange grower to the seed from the more perfect orange. The wild, hardy orange of China, *Citrus trifoliata*, has been used and found to give considerable resisting strength to the cultivated forms. Thus it is that, though we do not add anything to the original resisting power, we may by such selective practices as these, restore to some extent the lost vitality.

BARREN FIG-TREES.—I have read the article in MEEHANS' MONTHLY, page 157, on "Barren Fig-trees," and would suggest to Mr. J. C. Dixon that he root-prune the fig-tree that he mentions drops its fruit.

Fig-trees growing in rich soil with unrestricted root-room seldom hold their fruit, especially the first crop.

If convenient, he should restrict the root space to a well-drained, 4-foot border.

By pinching all young growths back to 3 leaves, a good second crop can generally be obtained, and this crop will not fall as readily as the first crop.

The tree should be either wrapped with straw or buried in soil during winter, which will prevent the young figs being injured by the frost. W. G. GOMERSALL,

Fishkill-on-the-Hudson, N. Y.

SCALE INSECTS.—"Horticulturist" writes: "Under the caption of the Eye Scale, I notice, in the August issue of MEEHANS' MONTHLY, a note with reference to the prevalence of San Jose scale in Canada. May I ask if the name Eye scale is that which is commonly, or even occasionally, applied to the insect now generally known as the San Jose scale. So far as my observation goes, I have observed in Canada three species of the genus *Aspidiotis*. These are all characterized by the peculiar nipple-like protuberance upon the scale covering. Two of them, however—*A. ancylus* and *A. Forbesii*—do not appear to be dangerous in this climate. *A. perniciosus* was brought into Canada on nursery stock imported from New Jersey three years ago. A single consignment from a leading firm in that State to a dealer in Canada distributed the scale to half a dozen or more points in Southern and Western Ontario. The reason that fruit growers are somewhat alarmed and are taking active measures to prevent its spread is (1) that it is breeding with great rapidity; (2) that it does not yield readily to such remedies as are applied and found effective in the case of the Oyster-shell Bark Louse and the Scurfy Bark Louse; (3) that it is very small and extremely inconspicuous and in this way may be readily distributed by various natural agencies. I have seen this summer, Abundance plum trees in rich land, under the best cultural conditions possible, and in addition to this sprayed with Kerosene Emulsion, swarming with San Jose scale in various stages of development; the trees evidently becoming enfeebled and promising an early death. For these reasons, and considering the rapid spread of the insect in the Eastern States, I think the fruit growers of Ontario have just cause to be alarmed and to exercise the greatest vigilance possible in preventing the spread of this insect.

May I ask again if the name Eye Scale applies to *A. perniciosus* or to the genus?"

It seems hard that the sender of the nursery stock infested with scale from New Jersey, should not be named and prosecuted. No respectable intelligent nurseryman would send out insect-affected trees. He knows that his business would soon come to an end. But he is made to suffer with the guilty in the indefinite manner employed.

As to the destruction of insects generally the intelligent gardener finds one general principle applies to all.

Insects that breathe through pores, get them clogged and are suffocated by oily liquids. Insects which feed on the leaves, are poisoned by the arseniates. If some insects escape when others are destroyed, it would seem to mean that the material was weaker in one case than the other, or applied when the insect was dormant—not eating or breathing to any extent. If it be a fact that what will kill one kind of insect will prove harmless to another, there ought to be no difficulty in pointing out the manner in which the one kind secures this advantage over the others.

OLD FASHIONED FRUITS.—A correspondent notes, that all efforts of new fruits to replace the Bartlett and Seckel pears have failed.

INFLUENCE OF GRAFT ON THE STOCK.—Mr. C. N. Green, Andover, Mass., says: "A gentleman living in North Andover, Mass., tells me that he had a seedling peach tree which bore worthless fruit. The tree was budded with a good fruit; but the budded shoots all died. After that the tree bore good fruit. I know a worthless apple tree having some inedible fruit which was grafted with the R. I. Greening. It bore very large and handsome Greenings, which were bitter, watery and worthless."

These peculiar cases deserve to be followed up by actual experiment. It has been definitely ascertained that a stock budded or grafted with a variegated-leaved variety, will push out variegated branches from the stock. The difficulty in the way of accepting the graft-influence by grafting to the extent it is often presented to us, is, that natural sports of this kind are not uncommon. Nectarines will occasionally come from peach branches.

WILLARD'S CURCULIO CATCHER.—Thanks to those who make a practice of studying insect life, it was found that the curculio beetle was a specially timid one. If a bird or any creature showed the slightest disposition to disturb it, it would instantly drop to the ground for protection, flying up to the tree-tops again when the danger was past.

With this knowledge gained, a wide-awake fruit grower of Alton, Ill., about a quarter of a century ago, invented a wheel-barrow with a broad, funnel-formed frame of muslin, something similar to the representation in the cut annexed. It had an opening in front to admit of the wheel or some portion of the frame being pushed against the trunk of the tree. The sudden jar brought down the timid beetles. Collected through the funnel into a receptacle, they were then destroyed.

Dr. Hull had abundance of fruit when others had none. He reaped a good reward for his invention.

But it was found that the sudden jar eventually injured the trees. Something better was desired. S. D. Willard, of Geneva, N. Y., then thought of a pole,—a sort of crutch, padded to avoid injuring the bark, and which was employed to jar the large branches. The manner of doing this is well illustrated by the cut annexed, for which we are indebted to the courtesy of Professor Bailey, of Cornell University.

Mr. Willard made plum-growing for market very profitable by this simple improvement on Dr. Hull's method. For market purposes, a comparatively large orchard is desirable, so as to make it worth while to employ a man constantly at work to keep the beetle down.

But amateurs with a few trees can practice the plan with very little expenditure of time and labor. Some sheets spread under the trees, and the padded crutch, will bring the insects down, and in a few minutes the job is done.

WILLARD'S CURCULIO CATCHER.

HOLDERBAUM PEACH.—The Messrs. Kemp, of Harnedsville, Somerset County, Pa., are introducing a peach they call Holderbaum. It ripens in that cool part of the world from August 10th to 15th, and would therefore rank among the early varieties. Early peaches are usually comparatively small; but the fruit of this has many specimens 12 to 14 inches in circumference. They describe it as a free-stone of firm texture, yellow with streaks of red; skin creamy yellow, with red cheek on the sunny side.

the cultivation of the peach. For instance, seed from trees that have never been grafted give an advantage to the kind which is grafted on it. So with the orange, the wild, sour species is preferred by the orange grower to the seed from the more perfect orange. The wild, hardy orange of China, *Citrus trifoliata*, has been used and found to give considerable resisting strength to the cultivated forms. Thus it is that, though we do not add anything to the original resisting power, we may by such selective practices as these, restore to some extent the lost vitality.

BARREN FIG-TREES.—I have read the article in MEEHANS' MONTHLY, page 157, on "Barren Fig-trees," and would suggest to Mr. J. C. Dixon that he root-prune the fig-tree that he mentions drops its fruit.

Fig-trees growing in rich soil with unrestricted root-room seldom hold their fruit, especially the first crop.

If convenient, he should restrict the root space to a well-drained, 4-foot border.

By pinching all young growths back to 3 leaves, a good second crop can generally be obtained, and this crop will not fall as readily as the first crop.

The tree should be either wrapped with straw or buried in soil during winter, which will prevent the young figs being injured by the frost. W. G. GOMERSALL,

Fishkill-on-the-Hudson, N. Y.

SCALE INSECTS.—"Horticulturist" writes: "Under the caption of the Eye Scale, I notice, in the August issue of MEEHANS' MONTHLY, a note with reference to the prevalence of San Jose scale in Canada. May I ask if the name Eye scale is that which is commonly, or even occasionally, applied to the insect now generally known as the San Jose scale. So far as my observation goes, I have observed in Canada three species of the genus *Aspidiotis*. These are all characterized by the peculiar nipple-like protuberance upon the scale covering. Two of them, however—*A. ancylus* and *A. Forbesii*—do not appear to be dangerous in this climate. *A. perniciosus* was brought into Canada on nursery stock imported from New Jersey three years ago. A single consignment from a leading firm in that State to a dealer in Canada distributed the scale to half a dozen or more points in Southern and Western Ontario. The reason that fruit growers are somewhat alarmed and are taking active measures to prevent its spread is (1) that it is breeding with great rapidity; (2) that it does not yield readily to such remedies as are applied and found effective in the case of the Oyster-shell Bark Louse and the Scurfy Bark Louse; (3) that it is very small and extremely inconspicuous and in this way may be readily distributed by various natural agencies. I have seen this summer, Abundance plum trees in rich land, under the best cultural conditions possible, and in addition to this sprayed with Kerosene Emulsion, swarming with San Jose scale in various stages of development; the trees evidently becoming enfeebled and promising an early death. For these reasons, and considering the rapid spread of the insect in the Eastern States, I think the fruit growers of Ontario have just cause to be alarmed and to exercise the greatest vigilance possible in preventing the spread of this insect.

May I ask again if the name Eye Scale applies to *A. perniciosus* or to the genus?"

It seems hard that the sender of the nursery stock infested with scale from New Jersey, should not be named and prosecuted. No respectable intelligent nurseryman would send out insect-affected trees. He knows that his business would soon come to an end. But he is made to suffer with the guilty in the indefinite manner employed.

As to the destruction of insects generally the intelligent gardener finds one general principle applies to all.

Insects that breathe through pores, get them clogged and are suffocated by oily liquids. Insects which feed on the leaves, are poisoned by the arseniates. If some insects escape when others are destroyed, it would seem to mean that the material was weaker in one case than the other, or applied when the insect was dormant—not eating or breathing to any extent. If it be a fact that what will kill one kind of insect will prove harmless to another, there ought to be no difficulty in pointing out the manner in which the one kind secures this advantage over the others.

OLD FASHIONED FRUITS.—A correspondent notes, that all efforts of new fruits to replace the Bartlett and Seckel pears have failed.

INFLUENCE OF GRAFT ON THE STOCK.—Mr. C. N. Green, Andover, Mass., says: "A gentleman living in North Andover, Mass., tells me that he had a seedling peach tree which bore worthless fruit. The tree was budded with a good fruit; but the budded shoots all died. After that the tree bore good fruit. I know a worthless apple tree having some inedible fruit which was grafted with the R. I. Greening. It bore very large and handsome Greenings, which were bitter, watery and worthless."

These peculiar cases deserve to be followed up by actual experiment. It has been definitely ascertained that a stock budded or grafted with a variegated-leaved variety, will push out variegated branches from the stock. The difficulty in the way of accepting the graft-influence by grafting to the extent it is often presented to us, is, that natural sports of this kind are not uncommon. Nectarines will occasionally come from peach branches.

WILLARD'S CURCULIO CATCHER.—Thanks to those who make a practice of studying insect life, it was found that the curculio beetle was a specially timid one. If a bird or any creature showed the slightest disposition to disturb it, it would instantly drop to the ground for protection, flying up to the tree-tops again when the danger was past.

With this knowledge gained, a wide-awake fruit grower of Alton, Ill., about a quarter of a century ago, invented a wheel-barrow with a broad, funnel-formed frame of muslin, something similar to the representation in the cut annexed. It had an opening in front to admit of the wheel or some portion of the frame being pushed against the trunk of the tree. The sudden jar brought down the timid beetles. Collected through the funnel into a receptacle, they were then destroyed.

Dr. Hull had abundance of fruit when others had none. He reaped a good reward for his invention.

But it was found that the sudden jar eventually injured the trees. Something better was desired. S. D. Willard, of Geneva, N. Y., then thought of a pole,—a sort of crutch, padded to avoid injuring the bark, and which was employed to jar the large branches. The manner of doing this is well illustrated by the cut annexed, for which we are indebted to the courtesy of Professor Bailey, of Cornell University.

Mr. Willard made plum-growing for market very profitable by this simple improvement on Dr. Hull's method. For market purposes, a comparatively large orchard is desirable, so as to make it worth while to employ a man constantly at work to keep the beetle down.

But amateurs with a few trees can practice the plan with very little expenditure of time and labor. Some sheets spread under the trees, and the padded crutch, will bring the insects down, and in a few minutes the job is done.

WILLARD'S CURCULIO CATCHER.

HOLDERBAUM PEACH.—The Messrs. Kemp, of Harnedsville, Somerset County, Pa., are introducing a peach they call Holderbaum. It ripens in that cool part of the world from August 10th to 15th, and would therefore rank among the early varieties. Early peaches are usually comparatively small; but the fruit of this has many specimens 12 to 14 inches in circumference. They describe it as a free-stone of firm texture, yellow with streaks of red; skin creamy yellow, with red cheek on the sunny side.

INTENTIONAL SECOND EXPOSURE

BIOGRAPHY AND LITERATURE.

THE DATE PALM AND THE VINE.

The Palm, the Palm, the royal Palm!
  Beneath its stately crown
Hangs golden dates high overhead
  Or casts them ripened down.
The Vine, the Vine, the graceful Vine!
  Its luscious fruit conceals,
Till purple grapes beneath its leaves
  A wooing breeze reveals.

—MARY BAYARD CLARKE.

FLOWERS AND INSECTS.—Prof. Felix Plateau, of Ghent, Belgium, has recently published a learned paper to show that the statements of Sir John Lubbock and Grant Allen, in relation to flowers and insects, are in a great measure imaginary and partake more of romance than of fact. This has long been decided by leading botanists of America. It has been placed beyond doubt that bees will visit flowers which are entirely destitute of perfume and attractiveness just as readily when they contain nectar as they do those which have color and fragrance.

LOTUS AND THE LOTUS EATERS.—Dr. J. Schneck contributes an interesting paper to the *Indianapolis Journal* on the Lotus and the Lotus eaters,—an interesting subject to classical scholars. Xenophon and others describe the country of the Lotophagi or Lotus eaters. Those foreigners who ate this Lotus lost all desire to return to their own land.

The *Ziziphus Lotus* has long fruited on the grounds of the writer of this notice—or at least the *Ziziphus vulgaris*, which is so nearly like it, as to not be likely to have fruits very distinct in general character. But the fruit is more likely to lead one to forget to eat it again, than to forget his native land. By no means offensive, but there is little more attraction than in a hawthorn "berry," and this is about true of all the other fruits that have at times been brought up to fit in with the probably apocryphal story,—the Carib or St. John's Bread, the mediterranean persimmon, and the nettle tree.

If there is any foundation for the story, perhaps the persimmon beer, made from the Diospyrous Lotus, was intoxicating,—and anything of this kind may lead one to forget many things.

FLOWER GARDENING.—Under the title of "Favorite Flowers of Garden and Greenhouse," a work to consist of 316 colored plates, in 52 parts, at 50 cents a part, is to be started by Frederick Name & Co., of 103 Fifth Avenue, New York. It appears to be an English work with a New York house for the medium of distribution in our country. Edward Step is the editor,—William Watson, of Kew, has charge of the cultural directions, and Bois of Paris the charge of the pictures. It should be a work of great value to the garden lovers.

ORIGIN OF BORDEAUX MIXTURE.—That discoveries are often accidental and unlooked for, is a well-known fact; but it is not generally known that the famous Bordeaux Mixture was of this class.

Prof. Lodeman in his useful and complete work on spraying says: "It was not until the fall of 1885 that there appeared unmistakable evidence, based upon experiments, that a substance had been found which promised to be a specific against the grape mildew, and perhaps also against many other fungous diseases.

"In Southwestern France, in the maritime department of the Gironde, is situated the city of Bordeaux. It lies near the western border of a large horticultural district of which the grape is by far the most important fruit. These grapes are mostly manufactured into wine, and it is particularly the clarets which have made this district known throughout the World. It is here that the downy mildew of America first made its appearance in Europe, probably in 1878, and here also it first became most serious. The summer of 1882 was particularly favorable to its development; and as no steps had been taken to check its progress, the injury done to vineyards was very great. The foliage of the vines was destroyed and fell

to the ground during the summer. This prevented the proper ripening of the grape, and the harvest was almost without value.

"It was noticed by many that in the fall of 1882 certain vines retained their foliage in an almost perfect condition. Vineyardists in these localities have suffered considerable losses from the stealing of their grapes by children and travelers along the highways. It had formerly been the custom to sprinkle verdigris upon a few rows of the vines nearest to the road, for the purpose of giving the fruit the appearance of having been poisoned. Several years before the appearance of the Downy Mildew, this substance was replaced, from reasons of economy, by a mixture of the milk of lime and some salt of copper, the sulphate being commonly used, on account of its cheapness. This mixture was of the consistency of cream, and was of a light blue color. The design was to apply enough to give it the appearance of having been well poisoned.

"The vines thus treated were the ones which had retained their foliage through the fall of 1882, while others growing further from the road lost their leaves. The cause of the beneficial action of the mixture was soon ascribed to the copper, for lime used alone had proved unsatisfactory as a remedy for mildew.

"In 1883, Millardet, believing that copper was the most efficient agent in the destruction of the mildew, applied this metal in other forms than the sulphate. He used, in addition, the carbonate, phosphate and sulphite of copper, and also the corresponding salts of iron. Lime was also applied alone. In 1884 the same work was repeated, and although the mildew was not very abundant, still he came to the conclusion that the mixture of the sulphate of copper and the milk of lime was the most promising of all the materials applied. They decided to give up the use of the iron salts, as well as the simple solution of copper sulphate. It was found that the latter burned the leaves when used stronger than one-half part of salt in 100 parts of water. This result, however, does not agree with those obtained by Messrs. Ad. Perrey, P. de Lafitte, and Maginen. On the estate of Salle de Pez, at St. Estéphe, an 8 per cent solution of copper sulphate proved to be nearly as efficient as when lime was added.

During these two years the mildew was not very prevalent in the treated vineyards, so that only partially satisfactory results were obtained. These were, however, of sufficient value to warrant the publication of an article by Millardet, in which was given the following formula:

"In 100 liters of water, dissolve 8 kilos of commercial sulphate of copper. In another vessel make a milk of lime by slacking 15 kilos of quicklime in 30 liters of water. This is then added to the copper sulphate solution, causing a bluish precipitate. Such was the first formula for making the Bordeaux Mixture; and the first apparatus used for its application was a broom.

"During 1885, the Downy Mildew developed with much intensity. Many experiments were tried, and the year brought out a number of facts regarding the various treatments. The value of the '*bouillie bordelaise*' was proved beyond all doubt. Wherever it had been properly used, the results were all that could be wished. Untreated vines lost their leaves; and those to which the mixture had been applied, retained them in an almost perfect condition. These results are all the more remarkable on account of the very crude method of applying the mixture, a small broom being generally used for the purpose. The most marked and promising results of the year were probably obtained by de Ferrand, Johnston, and David.

"The original formula of the mixture was modified by various vineyardists in 1885. De Ferrand used successfully about the same quantity of lime as of copper sulphate. David added glue to the mixture at the rate of 6 kilos strong glue dissolved in 800 liters of the mixture. The first trial of the addition of glue was apparently followed by beneficial result.

"The first application of the Bordeaux Mixture for the prevention of other diseases than those of the vine seems also to have been made this year. Prillieux, in his report to the Minister of Agriculture, dated October 22, 1885, says that Jouet, at Château-Langoa (Médoc), made an application to tomatoes, which were apparently attacked by the same peronospora that is found upon potatoes. He believed he had cured or stopped the disease. Since this fungus is closely related to the peronospora of the vine, it seemed very probable that the remedy would prove equally effective for all similar diseases."

GENERAL NOTES.

GEORGIA HORTICULTURAL SOCIETY.—The twenty-first annual meeting of the Georgia State Horticultural Society was held at Savannah in the first week of August, under the presidency of Mr. P. J. Berckmans. It is one of the most successful and largely-attended of the State Horticultural Societies. Much attention was given at this meeting to the San Jose scale; and the Le Conte pear was shown to be a profitable article for commercial purposes. A collection of onions embraced no less than twenty varieties. Like Le Conte pear growing, onion growing is said to be generally a good commercial speculation. Mr. Berckmans was again elected to preside over the Society's progress.

COLOR CHARTS.—We have now standards for almost everything. We can measure the miles we travel; and the thermometer and barometer tell us of the degree of heat or cold, or the pressure of the atmosphere. We have been at a loss to get a standard of color. We can no more convey to another our thought on a color than we could the condition of the temperature before the thermometer was invented. Mr. Prang has now solved the problem. He has invented a color chart by which we can tell another precisely the color we mean, even to the most graded shade.

WEED LAWS.—There is entirely too much law in our country. Everyone is to get rich by law,—and law is to protect us from every evil. The State—whatever that may be—is to do everything for us. But when we put these laws into effect, the absurdity becomes manifest. Among the daily news in the public prints is an account of a potato patch that was so remarkably healthy that the plants were loaded with blossoms. It was reported to the County Inspector of Weeds, that an outrageous growth of weeds was suffered to flower in the man's field. The Inspector satisfied himself that the complaint was well-founded, issued the usual citation to abate the nuisance. It was at the expense of some time and considerable chagrin that the guardian of the farmers' fields learned that the flowers were a legitimate part of the potato plant.

SUN-FLOWER CURE FOR MALARIA. — Mr. Moncorvo, of Rio de Janeiro, gives in the *Gazette Hebdomadaire de Medicine et de Chirurgie*, a lesson upon the value of the sunflower (*Helianthus annuus*) as a specific in the treatment of malarial fevers.

It appears that in a remote period, the Russian peasants were fully convinced of the febrifugal properties of this plant growing amongst them. As soon as they were taken with the fever, they laid down, upon a sort of bed made from the leaves, and were wholly covered by them. A Russian physician, M. Monisnoff, guided by this fact, systematically administered this plant under a form of tincture from its leaves, against intermittent fevers, and found it excellent.

To return again to this practice, M. Moncorvo has given alcoholic tincture of sunflower leaves in doses of six grammes in twenty-four hours, as a potion, and obtained a cure as promptly as with quinine. Even in some cases where quinine was shown to be ineffectual, helianthus was successful.

Sarah D. Lanning, from *Lyon-Horticole.*

ROUMANIA ON THE BALTIC!—Mrs. Seliger says:—

"What will the learned readers of your valuable magazine think of my geographical knowledge in locating Roumania on the coast of the Baltic. No doubt this stupid blunder is occasioned by my bad writing, when it should read Pomerania, a province of northern Prussia. It is so easy to shift it on the types, but in this case the P could very lightly be taken for an R. If you, sir, deem it of importance enough, will you kindly explain the mistake."

SITUATIONS WANTED

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENER, desires situation on a private place. Life experience in every branch of horticulture and landscaping. Married, children all grown. Unexcelled references. Thomas H. Geraghty, Newport, R. I.

GARDENER, Scotchman, age 31, married, no children, desires position on private place. Has practical and extensive experience in every detail. Excellent reference. W. A., Box 283, Westport, Conn.

GARDENER.—Situation wanted by a thoroughly practical gardener. Good references from present employer; English, age 38; married, one child. Address "G. J.," care MEEHANS' MONTHLY.

The Plant World An illustrated monthly journal of popular botany, edited by F. H. KNOWLTON, Ph.D., assisted by a corps of prominent botanists. The journal is a 16-page octavo, neatly printed, and aims to present the interesting things about plants in an attractive manner. Many prominent botanists have promised to contribute to the first volume. In everything the journal will be *Scientific but not Technical.* Subscriptions, $1.00 a year; sample free if requested now. Address, **Willard N. Clute & Co., Publishers, Binghamton, N. Y.**

BULBS.—Something out of the general run of Fall Bulb Catalogues is issued by H. F. Michell, 1018 Market St., Philadelphia, and is well worth while sending for. It's free.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of Rare and Beautiful California Novelties. Many New Begonias, New Cosmos, Rare Cacti, etc. Offered by no others.

Ventura-by-the-Sea, Cal.

The Great French Strawberry

LOUIS GAUTHIER

Only large fruiting kind which bears on new runners. Old plant fruits in June, making runners which fruit in September. Write to

A. T. GOLDSBOROUGH, West Washington, D.C.

C. G. Van Tubergen, Jr, Haarlem, Holland
CHOICE DUTCH BULBS
AND ATTRACTIVE BULBOUS PLANTS
CATALOGUES FREE
C. C. ABEL & CO., Sole Agents, Box 920, New York

Thomas Meehan & Sons

NURSERYMEN AND LANDSCAPE ENGINEERS

Germantown, Philadelphia, Pa.

Shade Trees of all sizes. Large and well-developed specimen trees suitable for planting for immediate effect.

Hedges planted, pruned and cared for.

Plans prepared for the laying out and planting of lawns and large private places.

Grading, Roadmaking and all forms of Construction Work.

Rare, New Choice

BULBS.—Thirty hardy, beautiful sorts from Japan. Many gorgeous sorts from the Pacific Coast. All Dutch Bulbs, Hyacinths, Tulips, Crocus, etc.
SHRUBS.—Fifty rare sorts of Tree Pæonies. Cornus, Styrax, Hardy Magnolias, Rhododendrons, Roses, etc.
CONIFERS.—The choicest, hardy sorts for Park, Lawn or garden.
CLIMBERS.—in all known varieties.
SEEDS.—Choice Flower, Palm Shrub and Conifer Seeds from all parts of the world.
Iris Kæmpferi in fifty rare sorts.
Herbaceous Pæonies in beautiful novelties.
Send for our Catalogue It cannot fail to interest you.
Address
H. H. BERGER & CO., Horticultural Importers
220 Broadway (St. Paul Building), New York
Branch Office: San Francisco, Cal. (Established 1878).

Orchids

Cattleya Labiata

We have received advices of a shipment of the above and for which we are now booking orders. For other imported and established Orchids in fine condition, write for prices to

LAGER & HURRELL
Orchid Growers and Importers
SUMMIT, N. J.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

Potash

phosphoric acid, and nitrogen, are the necessary ingredients of a complete fertilizer; Potash being most important, must not be stinted. Send for our books mentioned below.

Free An illustrated book which tells what Potash is, how it should be used, and how much Potash a well-balanced fertilizer should contain, is sent free to all applicants. Send your address.

GERMAN KALI WORKS, 93 Nassau St., New York.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS. L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

VOL. X. NO. 463.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

JANUARY 6, 1897.

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

ARMSTRONG & McKELVY Pittsburgh.
BEYMER-BAUMAN Pittsburgh.
DAVIS-CHAMBERS Pittsburgh.
FAHNESTOCK Pittsburgh.
ANCHOR, ECKSTEIN } Cincinnati.
ATLANTIC, BRADLEY, BROOKLYN, JEWETT, ULSTER, UNION } New York.
SOUTHERN, SHIPMAN } Chicago.
COLLIER, MISSOURI, RED SEAL, SOUTHERN } St. Louis.
JOHN T. LEWIS & BROS CO Philadelphia.
MORLEY Cleveland.
SALEM Salem, Mass.
CORNELL Buffalo.
KENTUCKY Louisville.

WHITE LEAD is like a great many other articles offered for sale; some good, some bad. (See list of the brands which are genuine, or good.) They are made by the "old Dutch" process of slow corrosion. Avoid getting the other sort by making sure of the brand.

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information and card showing samples of colors free; also cards showing pictures of twelve houses of different designs painted in various styles or combinations of shades forwarded upon application to those intending to paint.

National Lead Co., 1 Broadway, New York.

CAMPBELL'S EARLY Seeds Need Not Be Swallowed.

"First of all Grapes," says *Rural New-Yorker*. Scaled 96 points in possible 100. "Will ship round the world." Early or Late. Insist on our Seals and get what you buy. Largest stock of other Grape Vines, Small Fruits. Elegant Catalogue FREE

GEORGE S. JOSSELYN, FREDONIA, NEW YORK.

LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS

STEAM AND HOT WATER HEATING ENGINEERS

(Established 1856)

Plans and estimates furnished on application for Greenhouses, Conservatories and all kinds of Horticultural Buildings, erected complete with our patent iron construction; or for material only, ready for erection.

Largest Builders of Greenhouse Structures. Plans and Construction embrace latest improvements
Six Highest Awards at the World's Fair

Send four cents postage to New York Office for latest catalogue

NEW YORK OFFICE: 160 Fifth Avenue, Cor. 21st St. GENERAL OFFICE AND WORKS, Irvington-on-Hudson, N. Y

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for 25c.

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., - - - Boston.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

Potash

phosphoric acid, and nitrogen, are the necessary ingredients of a complete fertilizer; Potash being most important, must not be stinted. Send for our books mentioned below.

Free

An illustrated book which tells what Potash is, how it should be used, and how much Potash a well-balanced fertilizer should contain, is sent free to all applicants. Send your address.

GERMAN KALI WORKS, 93 Nassau St., New York.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

VOL. X. NO. 463.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

ARMSTRONG & McKELVY Pittsburgh.
BEYMER-BAUMAN Pittsburgh.
DAVIS-CHAMBERS Pittsburgh.
FAHNESTOCK Pittsburgh.
ANCHOR } Cincinnati.
ECKSTEIN }
ATLANTIC
BRADLEY
BROOKLYN
JEWETT } New York.
ULSTER
UNION
SOUTHERN } Chicago.
SHIPMAN }
COLLIER
MISSOURI
RED SEAL } St. Louis.
SOUTHERN
JOHN T. LEWIS & BROS CO Philadelphia.
MORLEY Cleveland.
SALEM Salem, Mass.
CORNELL Buffalo.
KENTUCKY Louisville.

WHITE LEAD is like a great many other articles offered for sale; some good, some bad. (See list of the brands which are genuine, or good.) They are made by the "old Dutch" process of slow corrosion. Avoid getting the other sort by making sure of the brand.

FREE By using National Lead Co.'s Pure White Lead Tinting Colors, any desired shade is readily obtained. Pamphlet giving valuable information and card showing samples of colors free; also cards showing pictures of twelve houses of different designs painted in various styles or combinations of shades forwarded upon application to those intending to paint.

National Lead Co., 1 Broadway, New York.

CAMPBELL'S EARLY Seeds Need Not Be Swallowed.

"First of all Grapes," says *Rural New-Yorker.* Scaled 96 points in possible 100. "Will ship round the world." Early or Late. Insist on our Seals and get what you buy. Largest stock of other Grape Vines, Small Fruits. Elegant Catalogue FREE

GEORGE S. JOSSELYN, FREDONIA, NEW YORK.

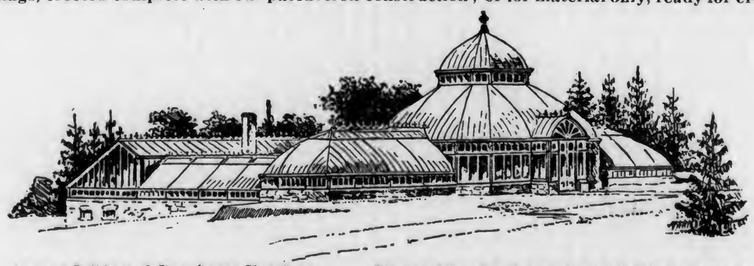
LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS

STEAM AND HOT WATER HEATING ENGINEERS

(Established 1856)

Plans and estimates furnished on application for Greenhouses, Conservatories and all kinds of Horticultural Buildings, erected complete with our patent iron construction; or for material only, ready for erection.



Largest Builders of Greenhouse Structures. Plans and Construction embrace latest Improvements
Six Highest Awards at the World's Fair

Send four cents postage to New York Office for latest catalogue

NEW YORK OFFICE: 160 Fifth Avenue, Cor. 21st St. GENERAL OFFICE AND WORKS, Irvington-on-Hudson, N. Y

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for 25c.

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., - - - Boston.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

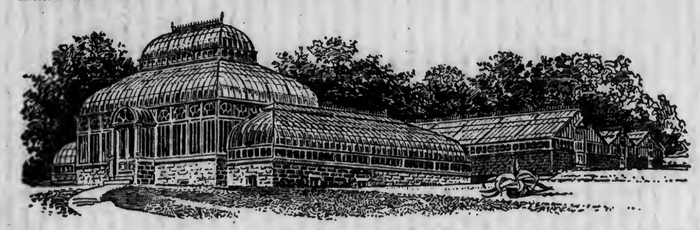
INTENTIONAL SECOND EXPOSURE

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

Landscape Engineering

Plans prepared and carefully carried out for Grading, Roadmaking, Planting and the Remodeling of old places ∴ Special arrangements made when extensive work is contemplated ∴ Correspondence solicited.

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers — GERMANTOWN, PHILADELPHIA

EDWARD CAMPBELL

LANDSCAPE ARCHITECT AND ENGINEER

ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. **Fine Crushed Stone for Walks and Carriage Drives.**

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS, The finest general assortment of Hardy Ornamental Plants in America. Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.

THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

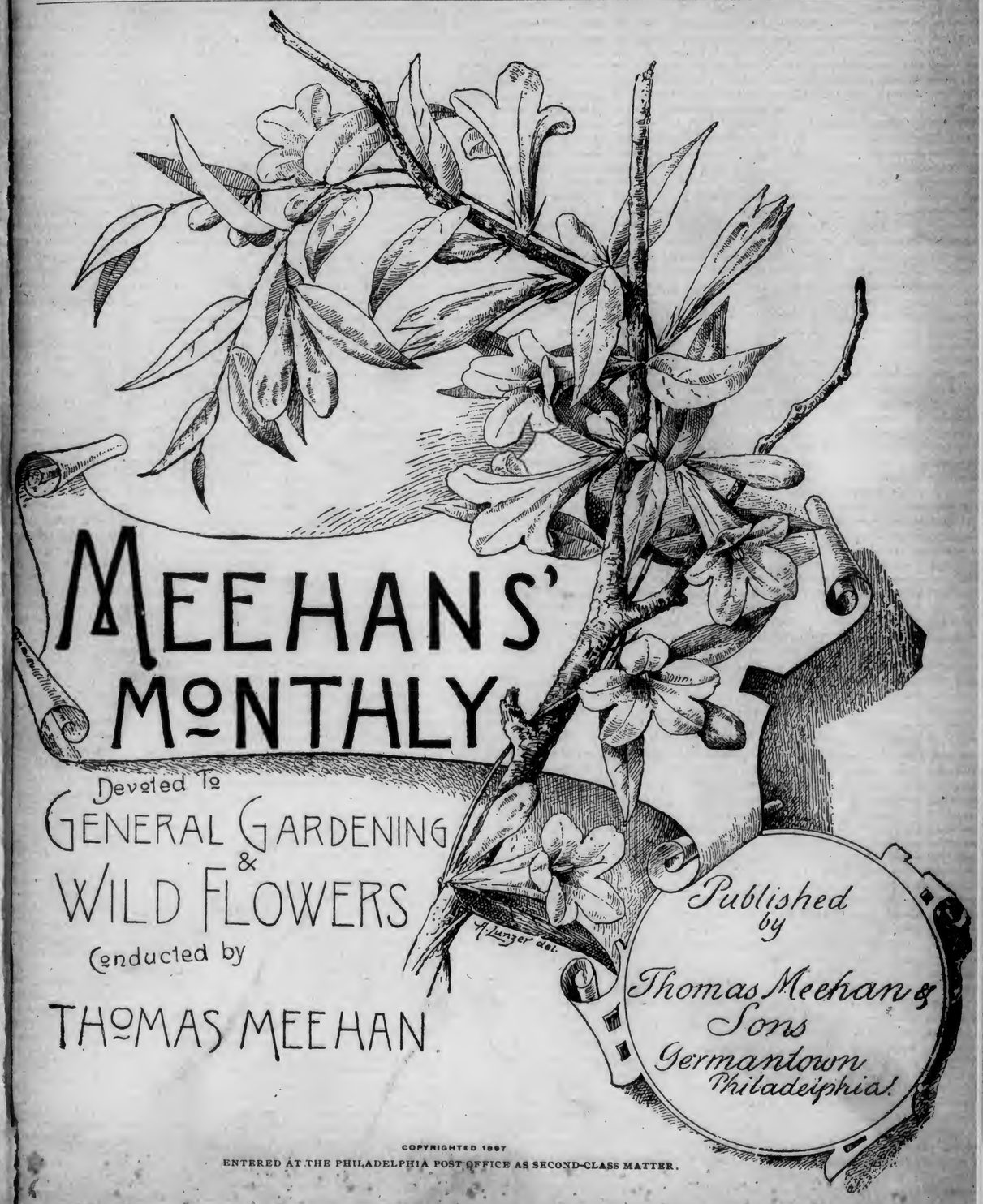
We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without putty. Latest methods of Ventilation, Steam and Hot-Water Heating. Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. ☞ Don't fail to get our Plans and Prices.

PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

WHEN WRITING TO ADVERTISERS, PLEASE MENTION MEEHANS' MONTHLY.

VOL. VII — NOVEMBER, 1897 — No. 11

ISSUED MONTHLY, $2.00 PER YEAR IN ADVANCE, SINGLE COPY 20 CENTS.



MEEHANS' MONTHLY

Devoted To

GENERAL GARDENING & WILD FLOWERS

Conducted by

THOMAS MEEHAN.

Published by Thomas Meehan & Sons Germantown Philadelphia.

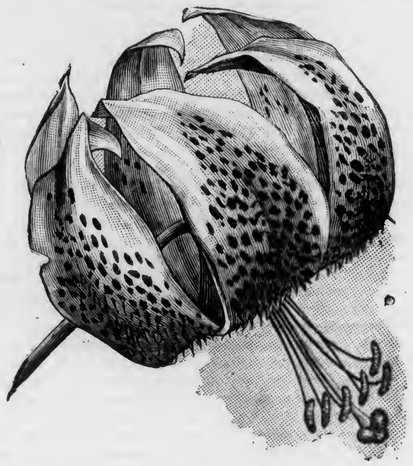
COPYRIGHTED 1897

ENTERED AT THE PHILADELPHIA POST OFFICE AS SECOND-CLASS MATTER.

IT WILL PAY YOU to send for our New Catalogue, which tells of **Hardy Trees, Shrubs, Plants, Roses, Fruit,** and our special stock of **Rhododendrons.** It will interest all who are interested in such matters.

ANDORRA NURSERIES, Chestnut Hill, Philadelphia, Pa.

WM. WARNER HARPER, PROPRIETOR



NOW IS THE TIME

to plant all kinds of LILIES. We carry a full line of the best varieties. Send for our Catalogue FREE on application.

HENRY A. DREER

PHILADELPHIA

NOVELTIES IN PLANTS, FRUITS, ETC.

A. BLANC & CO., 314, 316 N. 11TH ST., PHILADELPHIA

WALKER'S

EXCELSIOR FERTILIZER

AN ODORLESS, SOLUBLE PLANT FOOD

CONTAINS NO ACIDS OR COLORING MATTER

We will furnish a treatise on "Care of House Plants" and enough plant food for 25 plants for six months for 25 cents, post-paid, and enough for 25 plants for twelve months for 40 cents, post-paid.

We also manufacture an **Odorless Lawn Dressing** and **Fertilizers for Farm Crops.** Write us.

THE WALKER FERTILIZER CO.

CLIFTON SPRINGS, N. Y.

GROW BISMARCKS IN POTS.

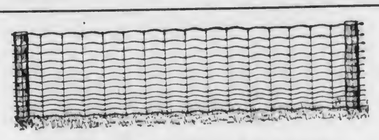
Wonderful Midget Bismarcks bear beautiful large Apples in Pots or Garden when two years old. **One Dollar Each.**

Crimson Rambler Roses, Magnificent Climber for Porch, **50 Cts. Each,** Prepaid.

Send for beautiful colored Lithographs giving descriptions. Address,

MANHATTAN NURSERY CO.,

47 X DEY ST., NEW YORK.



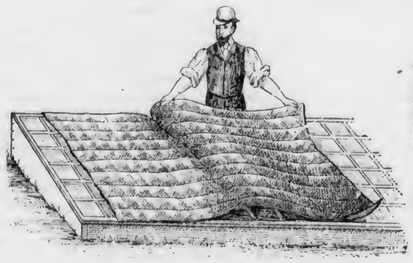
A Boundary Dispute.

That is what many line or "party" fences become. "Good fences make good neighbors." Never heard of a quarrel "over, through or under" **Page Fence.**

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

WINDOW GARDENERS The S. E. COVINGTON ADJUSTABLE WINDOW FLOWER STAND is the handsomest, most convenient article ever invented. You can get one free Enclose stamp for circular. Address, S. E. COVINGTON, Bellefontaine, Ohio.

HOT BED MATS



Made of strong Burlaps, warmly lined with wool and quilted

WARM, DURABLE, CONVENIENT, CHEAP

Excellent substitute for straw mats; are not injured by rain or snow; cost only one-fourth as much as straw mats and last longer. Made any length 6 feet wide.

Sample Sent on Approval

R. T. PALMER CO., 113 Worth St., New York

CUNILA MARIANA.

AMERICAN DITTANY.

NATURAL ORDER LABIATÆ.

CUNILA MARIANA, LINNÆUS.—Leaves ovate, serrate, sub-sessile; cymes pedunculate, corymbous, axillary and terminal. Stem four-angled, mostly purple, branching, smoothish, one to two feet high. Leaves small, nearly smooth, roundish or sub-cordate at the base, tapering to a point and punctate with pellucid dots. Flowers with subulate bracts at the base of the three-forked pedicels. Calyx punctate. Corolla nearly twice as long as the calyx, pubescent, pale red. Stamens and style much exserted, of the same hue as the corolla. Wood's *Class Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern United States*.

In the study of plants from a broad standpoint, the early history of the family is often instructive. This is particularly well illustrated in connection with *Cunila Mariana*, the plant herewith illustrated. It was first made known to botanists by the Reverend John Banister, who, in 1680, sent to the famous Ray, a catalogue of the plants of Virginia, in which he styled our plant *Chamædrys verna odoratissima*,—the binomial system of Linnæus not coming into vogue till some one hundred years later. Plukenet published numerous figures of plants in 1691, and gives a very good portrait of this as the *Calamintha mariana mucronatis rigidioribus et crenatis foliis*. From this, we see how Linnæus derived the specific name, *Mariana*. In establishing the two-name, or binomial system, he evidently desired to connect the plant-history of his time with history as it had gone before, so far as practicable, and it was his practice to take some term already used in the older descriptions, to represent the specific name in the new.

But, following its early history, we have Clayton sending Virginian plants to Gronovius, who published, in 1737, the *Flora Virginica* on the strength of the notes and specimens Clayton furnished. In this, it was supposed to be a member of the Thyme family; and, in the edition of 1762, it is removed to *Satureia*. Morison, in his History of Plants, issued in 1715, describes it as *Calamintha erecta Virginiana*, and says that it is sometimes called *Dictamnus Virginanus*,—a fact already noted by Plukenet, who remarks, further, that *Dictamnus* and Dittany are synonymous.

It appears in the earlier work of Linnæus as *Satureia ocymoides*, and later as *Melissa pule-geoides*,—until, in Schreber's edition, the genus *Cunila* was founded for it, under which it has since remained. Linnæus himself had not, however, a clear idea of the boundaries of the genus. He included with our plant species from Siberia and the Cape of Good Hope. As now understood, it is wholly composed of American species, of which there are now seventeen recognized, mostly Mexican and Brazilian,—our *Cunila Mariana* being the most northern of all. As South America becomes better explored, more species will probably be observed. In 1888, Mr. Pringle discovered an undescribed species of great beauty, in Mexico, and which Dr. Asa Gray named *Cunila longiflora*. The name *Cunila* is employed by Pliny and other classical authors, to describe some plant of the labiate family, having the spikes of flowers growing in cone-like heads, and, as the bracts of the original Dittany are enlarged, enclosing the flowers, and arranged very much like a pine cone. It is probably from this that Linnæus had the name suggested to him, seeing that the plant was already known as Dittany in our world. Though not having the cone-like flowers of the European Dittany, it preserved the historical connection of the popular name.

The eastern plant, *Origanum Dictamnus*, gave the word Dittany to our language. Old Gerarde, in his "Herbal," published in 1636, tells how this happened: "The Dittany cometh from Crete, an Island which we call Candie, where it grows naturally. I have seen it in my garden, where it hath flowered and borne seed, but it perisheth by reason of our extraordinary cold Winter that then happened; neverthelesse Dioscorides writeth against all truth, that it neither beareth flowers or seeds, after Theophrastus, Virgil witnesseth that it

COLOR PLATE

CUNILA MARIANA.

AMERICAN DITTANY.

NATURAL ORDER LABIATÆ.

CUNILA MARIANA, LINNÆUS.—Leaves ovate, serrate, sub-sessile; cymes pedunculate, corymbous, axillary and terminal. Stem four-angled, mostly purple, branching, smoothish, one to two feet high. Leaves small, nearly smooth, roundish or sub-cordate at the base, tapering to a point and punctate with pellucid dots. Flowers with subulate bracts at the base of the three-forked pedicels. Calyx punctate. Corolla nearly twice as long as the calyx, pubescent, pale red. Stamens and style much exserted, of the same hue as the corolla. Wood's *Class Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern United States*.

In the study of plants from a broad standpoint, the early history of the family is often instructive. This is particularly well illustrated in connection with *Cunila Mariana*, the plant herewith illustrated. It was first made known to botanists by the Reverend John Banister, who, in 1680, sent to the famous Ray, a catalogue of the plants of Virginia, in which he styled our plant *Chamædrys verna odoratissima*,—the binomial system of Linnæus not coming into vogue till some one hundred years later. Plukenet published numerous figures of plants in 1691, and gives a very good portrait of this as the *Calamintha mariana mucronatis rigidioribus et crenatis foliis*. From this, we see how Linnæus derived the specific name, *Mariana*. In establishing the two-name, or binomial system, he evidently desired to connect the plant-history of his time with history as it had gone before, so far as practicable, and it was his practice to take some term already used in the older descriptions, to represent the specific name in the new.

But, following its early history, we have Clayton sending Virginian plants to Gronovius, who published, in 1737, the *Flora Virginica* on the strength of the notes and specimens Clayton furnished. In this, it was supposed to be a member of the Thyme family; and, in the edition of 1762, it is removed to *Satureia*. Morison, in his History of Plants, issued in 1715, describes it as *Calamintha erecta Virginiana*, and says that it is sometimes called *Dictamnus Virginanus*,—a fact already noted by Plukenet, who remarks, further, that *Dictamnus* and Dittany are synonymous.

It appears in the earlier work of Linnæus as *Satureia ocymoides*, and later as *Melissa pulegeoides*,—until, in Schreber's edition, the genus *Cunila* was founded for it, under which it has since remained. Linnæus himself had not, however, a clear idea of the boundaries of the genus. He included with our plant species from Siberia and the Cape of Good Hope. As now understood, it is wholly composed of American species, of which there are now seventeen recognized, mostly Mexican and Brazilian,—our *Cunila Mariana* being the most northern of all. As South America becomes better explored, more species will probably be observed. In 1888, Mr. Pringle discovered an undescribed species of great beauty, in Mexico, and which Dr. Asa Gray named *Cunila longiflora*. The name *Cunila* is employed by Pliny and other classical authors, to describe some plant of the labiate family, having the spikes of flowers growing in cone-like heads, and, as the bracts of the original Dittany are enlarged, enclosing the flowers, and arranged very much like a pine cone. It is probably from this that Linnæus had the name suggested to him, seeing that the plant was already known as Dittany in our world. Though not having the cone-like flowers of the European Dittany, it preserved the historical connection of the popular name.

The eastern plant, *Origanum Dictamnus*, gave the word Dittany to our language. Old Gerarde, in his "Herbal," published in 1636, tells how this happened: "The Dittany cometh from Crete, an Island which we call Candie, where it grows naturally. I have seen it in my garden, where it hath flowered and borne seed, but it perisheth by reason of our extraordinary cold Winter that then happened; nevertheless Dioscorides writeth against all truth, that it neither beareth flowers or seeds, after Theophrastus, Virgil witnesseth that it

COLOR PLATE
INTENTIONAL SEC

doth beare flowers in the twelfth of his Ænidos. It is called in Greeke *dictamnus*, in Latine *Dictamnus* and *Dictamnum*: of some *Pulegium palustre* or wilde pennieroial; the Apothecaries of Germany, Dictamnum with *c*, in the first syllable, do reade *Diptamnum* with *p*; but this errour might have beene of small importance, if instead of the leaves of Dittanie they do not use the roots of *Fraxinella* for Dittany, which they falsely call *Dictamnus*." We conclude from this and other evidence that Dittany is a corruption derived from the old Greek word *Dictamnos*.

The original Dittany of Crete is an ornamental plant, and often is grown in gardens. It seems to have no flowers, as these are hidden by the rosy-pink bracts. In our Dittany, the bracts have retained their original leaf-like character. But if we can imagine the spike of flowers all drawn down to a compact head, and the green leaves broadened and colored rosy-pink, so as to embrace and virtually enclose the flowers, we should have a cone-like inflorescence similar to that which distinguishes the Dittany of Crete. The classical plant has had a prominent place in ancient history. The virtues ascribed to it were wonderful. Gerarde, already quoted, says: "Dittany is thought to be of so strong an operation, that with the very smell also it driveth away venomous beasts, and doth astonish them. It is reported likewise that the wild Goats or Deere in Candy, when they be wounded with arrowes, do shake them out by eating of this plant, and heal their wounds." He further says: "It draweth forth also splinters of wood, bones, or such like." Something of this is embodied in the account Virgil gives in the twelfth Æniad in reference to the struggle between Æneas and Turnus. As Dryden translates it:

"While he triumphs, and while the Trojans yield,
The wounded prince is forced to leave the field;
* * * *
Resolved in mind, regardless of the smart,
He tugs with both his hands, and breaks the dart,
The steel remains. No readier may be found
To draw the weapon, than t' enlarge the wound."

The physician tried everything, but the dart-head was immovable.

"But now the goddess-mother, moved with grief,
And pierced with pity, hastens for relief.
A branch of healing dittany she brought,
Which in the Cretan fields with care she sought
(Rough is the stem, with woolly leaves surround;
The leaves with flowers, the flowers with purple crowned.)
Well-known to wounded goats; a sure relief
To draw the pointed steel, and ease the grief.
This Venus brings in clouds involved, and brews
The extracted liquor with ambrosian dews,
And odorous panacea. Unseen she stands,
Tempering the mixture with her heavenly hands,
And pours it in a bowl, already crowned
With juice of medicinal herbs, prepared to bathe the wound.
The leech, unknowing of superior art
Which aids the cure, with this foments the part;
And in a moment ceased the raging smart.
Stanched is the blood, and in the bottom stands:
The steel, but scarcely touched by tender hands,
Moves up, and follows of its own accord,
And health and vigor are at once restored."

It has been stated that the volatile oil thrown off from the plant is inflammable, and that, on a lighted match being applied near the stem, an explosion will follow. It is just possible that there may be some peculiarity of this kind which permits water to be drawn up through the dried stems, presenting shaving-formed ice crystals around the stalks in the winter season, and which has drawn to the Dittany a large share of popular attention. A few other plants have the same power. It has been noticed in *Helianthemum Canadense*, *Pluchea bifrons*, and *Pluchea camphorata*. In the Old World, it has been noticed in the heliotrope. Many attempts at an explanation of the curious phenomena have been made, but none that seem fully to correspond with the facts of the case. That these ribands of ice are simply frozen matter, is clear enough, and that the water is drawn up from the earth through the dead and dry stems, continually freezing on the inner edge and forcing that already frozen towards the anterior edge of the riband, is also clear; but why these few plants alone, among so many hundreds of species with dry stems and under the same conditions, should have this hydrostatic power, is the point to be solved. There ought to be no difficulty, in these times, in setting this question at rest.

It is found in dry woods and rocky waste places in comparative abundance, through most of our seaboard states from New York to Georgia.

EXPLANATION OF THE PLATE.—1. Upper portion of a free-growing, branching specimen from Pennsylvania. 2. Lower portion of the square stem from which the frost-crystals usually protrude. 3. Single flower enlarged. 4. Enlarged calyx at maturity, showing the mass of down in the mouth, and on which, among other characters, the genus is founded.

WILD FLOWERS AND NATURE.

THE PREACHING OF THE WOODS.

The wild woods are my chosen haunt, and there
I read a fairer tome, a richer page,
Than pen of man has traced with characters
Of reason or of fancy. —PERCIVAL.

BOTANICAL PROGRESS.—Before the meeting of the British Association, at Toronto, Prof. Marshall Ward, in an address on the progress of botany, remarked:—

"Little more than thirty years ago, we knew practically nothing of the life history of a fungus, nothing of parasitism, of infectious diseases, or even of fermentation, and many botanical ideas now familiar to most educated persons were as yet unborn. Our knowledge of the physiology of nutrition was in its infancy, even the significance of starches and sugars in the green plant being as yet not understood; root-hairs and their importance were hardly spoken of; words like heteroecism, symbiosis, mycorhiza, etc., did not exist, or the complex ideas they now denote were not involved. When we reflect on these facts, and remember that bacteria were as yet merely curious 'animalculæ,' that rusts and smuts were generally supposed to be emanations of diseased states, and that 'spontaneous generation' was a hydra not yet destroyed, we obtain some notion of the condition of this subject about 1860."

ADAPTION IN ANIMALS.—Animals are said to be guided by instinct and not by reason or judgment. When, however, we find creatures, that have been for ages living in one country under certain conditions, removing to other countries where the conditions vary, we find them changing their habits to suit the different conditions; this is certainly evidence of reason and judgment. The English Sparrow is a case in point. Brought to America from the Old World, they have found entirely different conditions and are exercising themselves to adapt themselves to these new conditions. In the Old World, there are ivy-covered ruins, old thatched roofs, and innumerable places where they can conveniently build their nests without trouble. In America, there are few of these accommodations. When first introduced into America, they builded their nests in trees, as most other birds do. So in regard to the period of nesting. Our American winters are very uncertain in comparison with the winters of England; the thermometer may be one day at zero and in a few days afterwards at 50° or 60° above freezing point. When these warm days come, the sparrow feels inclined to nest-building. The bird evidently reasons that the coming of a few warm days means the advent of spring. The bird has not been long enough in the country to understand these sudden variations of climate, and in many other ways it may be shown that reason and judgment to a limited extent are the attributes of the lower orders of animals as well as of mankind.

AN ORIOLE'S BEAUTIFUL NEST.—Mrs. Theodosia B. Shepperd, the observing florist of Ventura, California, writes:

"I send you, by mail to-day, a quaint home made, by orioles, of the filaments of the California Fan Palm. It was fastened under one of the fronds of a large *Seaforthia elegans* Palm. You will see that there are three nests. The upper one was built last year, and the other two this year. It is not uncommon to find these nests singly, but I have never before seen a group of three together, and I think it will be interesting to you, and your friends, as a specimen of home-building in California."

The nests were made by Bullock's Oriole, the Californian representative of the Baltimore Oriole of the Eastern States. The tendency to be gregarious in nesting time will be of special interest to bird lovers, as no such tendency has been observed in the eastern species.

Much dexterity was shown in the manner of attaching the nests to the leaves, the threads making up the nests being run through as though worked by human hands. The nests were quite as artistic as those made by their eastern relatives.

TREE ON A CHURCH STEEPLE : AN INDIANA WONDER.—"In the summer of 1870, a citizen of Greensburgh, Ind., was examining the tower of the City Hall with a glass, when he observed springing from the third cornice above the street on the east side of the tower, one hundred and ten feet from the ground, a little twig.

But little was thought of it, and it was scarcely discernible with the naked eye.

The next spring, some interest was exhibited to know if the miniature tree in its strange and exposed position had survived the wintry blasts. It had; and, when sun and spring showers came on, it put out its leaves plentifully all the season.

By this time it was easily seen with the eye; but, as it could not be approached nearer than from the roofs of buildings, on the opposite side of the street, its species could not be ascertained.

The third spring it put forth again with renewed life, vigor and size, and this season it was decided to be a silver maple.

By this time the tree had become famous. Accounts of it had appeared in the papers; but the story was not generally believed. Nevertheless, the tree lived and grew. It was there, and no mistake, and has continued to this day. It is now more than twelve feet high, and thought to be three inches in diameter. The top is quite bushy; and, in summer season, the leaves are numerous and luxuriant. The rapid growth of the tree is prying the stones apart. This can easily be seen with a glass. Ere long the ambitious maple will have to be brought lower or damage to the building will follow.

(Fig 1.)

The Sheriff has already had several applications from expert climbers to take it down, but the people will not permit their tree to be removed yet." Greensburgh, Ind., letter to the *Chicago Times*.

Mr. Timothy Wheeler, of Moscow, Vt., who kindly sends the foregoing note, adds the following in a memorandum not intended for publication, but it is of sufficient interest to warrant its appearance here:

"The 'Indiana Wonder' that I enclose I have from Mrs. H. E. Hunter, of Waterbury Center, Vt. I can get no clue to dates, except 1870, which is quite unfortunate. This tree is duplicated in the Mountain Ash, 14 feet high, and bearing fruit every year, on a stone steeple in Utica, N.Y.

How these and similar trees are fed; from whence comes their nourishment, is a mystery to scientists,—and well it may be, from their standpoint.

"In experimenting with the maple every spring for nearly 20 years, I have learned many things relating to sap-flow, its origin, direction of the spring-flow, how fast it moves in a tree, how and where the saccharine is formed and from what; locality and extent of the laboratory of the tree, pressure, suction and zero of trees and the laws that govern them; how to measure the number of pounds pressure on a square inch; also the number of pounds pressure while in suction, etc.

"In the summer season, while the tree is growing, by a simple experiment, I can tell what days the tree is taking in moisture, also the days that it will or does not; also, I can tell not only the *source*, but *sources* from whence it comes, and *this*, with other facts, helps to explain the mystery of growths on stone steeples high in the air."

OLD WORLD PLANTS IN THE NEW.—While, as a general rule, vegetation and other incidents of nature are different in various parts of the world, yet there are instances where the plants, animals and other elements of one country find themselves so well suited in others that the new locality becomes a second and improved edition of the old. The writer of this paragraph was very much struck with this fact a few years ago on a visit to British Columbia, on the Pacific. In the vicinity of the city of Victoria, the wild English daisy, so well known throughout Burns' beautiful poem to the daisy which he turned down with his plow, was abundant in a wild state, and just as happy as if it were growing in its original Scotch or English home. The English Ivy throve in its original luxuriance, and the China roses grew around the houses of the settlers just as freely as they are famed to do around English cottage homes. In many other ways the visitor to Victoria would see a repetition of scenes familiar to a journey through England. It is said that just the same experience meets the traveler in portions of New Zealand. The trees which thrive so well in England, of the various species of oak, elm, larch, beech, willows and poplars, have been introduced there; and even the Dog Rose and the hawthorn give an interest to the hedges, just as they do in the Old Country. It is also said that the English settlers there have brought with them their customs as well as their trees, and the roads, parks, gardens and buildings generally would suggest to an unsuspecting traveler that he was still among the green fields and lawns of old England. All he has to do is to forget that the ivy-covered ruins are not to be found.

ABNORMAL HELIOPSIS.—Mr. W. C. Egan, of Highland Park, Ill., sends us a specimen, which he thus describes,—"I enclose one stalk of *Heliopsis Pitcheriani* showing a peculiar departure from normal. At a foot from the ground, it seemingly started to flower, but changed its mind and concluded to grow on. There are five yellow ray petals. You will observe that the diameter of the stem is larger above the petals than below, similar to a Scotch Pine when girdled." This is certainly one of the most remarkable instances of metamorphosis. The involucre is perfect, and the five ray petals are perfectly formed; but instead of the usual mass of florets forming the disk, the branch described by Mr. Egan has appeared. The writer has seen, in *Rudbeckia purpurea*, all the florets turned into very weak branches, and which, when sent to Dr. Asa Gray, were described as a case of craziness in the vegetable kingdom. This abnormal case gives admirable lessons in morphological science. Morphology teaches that all the florets in the compounding flowers are simply longer branches, which have coiled so as to form a disk, and that each of these flowers might have been a branchlet. Cases like this furnished by Mr. Egan are practical illustrations of this conception.

FREAKS IN FLOWERS.—My neighbors, knowing of my interest in abnormal or monstrous flowers, occasionally bring me something very interesting. Thus, a few days ago, Miss Edna Armstrong brought what she styled some "Freaks" in nasturtiums; and very curious freaks, indeed, they seemed to me.

Here, in Fig. 1, we have a three-parted nasturtium, except the stamens, which are five in number. The three sepals, petals and three-parted stigma are quite normal in size and general appearance, but there is *no spur whatever*. The three petals are conspicuously bearded.

In Fig. 2, there are five sepals, one of which is somewhat petaloid. Only two of the petals are bearded, and the spur has grown up from the center of the flower, inside, as I have tried to show, instead of projecting at the outer base of flower as it normally does.

In Fig. 3, we have another anomaly: A flower with four sepals and four petals, the

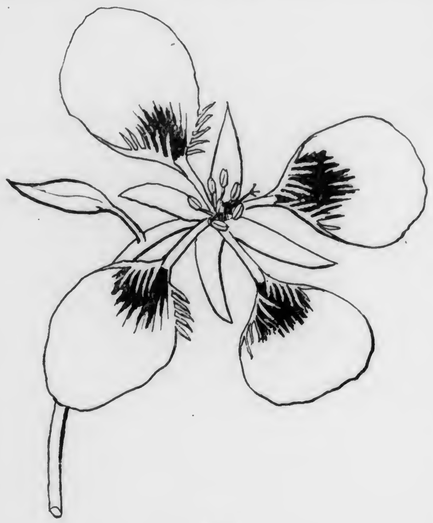
(Fig. 2.)

latter all prodigously bearded; stamens rather short, but anthers large. This flower had no trace of a spur. On the stem, as indicated in the illustration, there is another abnormality in the form of a small green leaf. There was one flower with five sepals and five petals, which also had no vestige of a spur, and all five petals were bearded. These abnormal flowers were all plucked from the same plant; it will be interesting to see if, another season, seeds from this particular vine produce similar abnormal flowers.

Just why the spur should be utterly dropped, is very curious; that there should be twisted, stunted, or other abnormal shapes of spurs, one would expect, but that the long spur should forget to grow at all—what *was* the nasturtium thinking about.

MRS. W. A. KELLERMAN.

VARIATIONS AND HYBRIDS. — Botanical works of high character are piling up a large list of plant names with an X behind them, signifying that they are hybrids. While it is natural to suppose that hybrid plants may now and then appear in nature, they must be rare from the fact that out of millions of seeds perfected annually, very few get a chance to grow and mature. This must be apparent to anyone who observes the number of cherry-stones under a cherry tree,—or acorns in a forest. That the chance-crossed seed should be the chance plant to grow, is barely within the possibilities. Very few but those who live among numerous growing trees have any idea of the great breadth of variation in species. There is no need for calling in hybridism to account for it.



(Fig. 3)

Some discussion has occurred in MEEHANS' MONTHLY as to whether the *Tecoma grandiflora* is a mere variety or sport from our ordinary Trumpet vine,—and whether other forms are hybrids or not. A number of specimens were sent to one of our distinguished botanists, and the following very interesting reply was received. The letter was not written for publication, and the author's name is not therefore appended:

"I quite agree with you that an attempt to regard the so-called *T. Thunbergii* as the result of a cross between such obviously distinct species as *T. grandiflora* and *T. radicans* is unwise. The form *Thunbergii* is manifestly of the *radicans* type, having the same coriaceous calyx and cylindrical tube. I am inclined to the belief that among plants as among animals there are very few natural hybrids. But on the other hand I believe there has been too strong a tendency in the past to suppress, as mere variations, forms which field observation leaves no room to doubt are valid species. In the case of *T. radicans*, we have noted such marked differences in the specimens thus far at hand, that I have encouraged the member of the herbarium staff who is studying the question to give it careful attention. I am by no means prepared to assert as yet that any additional species exists."

A SPECIAL SENSE IN ANIMALS.—It would seem at times as if the lower order of animals will have a place in mental philosophy. Referring to a recent note in MEEHANS' MONTHLY, regarding the accurate direction a young pig took over unknown paths, Mr. Sidney J. Hare, of Kansas City, sends the following:

"A family named Nading brought a Maltese cat here (Shelbyville, Ind.,) in January, from Topeka, Kas. The cat seemed discontented and disappeared after having been here three weeks. Yesterday the Nadings received a letter from relatives living in their old Kansas home, saying that the cat had returned, tired and hungry. It had traveled 600 miles."

LIGHTNING AND TREES.—A correspondent says:

"The early settlers in America found the Indians took refuge under a Gum tree during a thunder storm. Do you know of a Gum tree being struck by lightning?"

We have had little experience in localities where Gum trees (*Nyssa multiflora*) grow. Our impression has been that no large trees of any kind are exempt from liability to be stricken. Much has been written about some trees being more liable than others,—but the reasoning has not seemed conclusive.

GOLDENRODS OF THE PINE BARRENS.—Early in September, I spent a few days in the Pine Barrens of New Jersey, and, amid the fascinating and often unique flora of that wild region, it was interesting to note that the species of *Solidago* observed were quite distinct from those abounding in the cultivated country nearer Philadelphia. In the latter neighborhood, at that time, *S. nemoralis*, *Canadensis*, *altissima* and *serotina* were everywhere to be seen in perfection of flower, making old fields, borders of woods, and fence-rows gay with such a profusion of graceful, golden bloom, as I do not remember having ever seen until this year. When, however, the border line between the farming districts and the "barrens" was crossed, the familiar species suddenly ceased to be seen, and during two days spent in the heart of the "barrens"—a region almost devoid of population and uncultivated—I do not recall having observed a single specimen of any of the species noted above, unless it may have been in some old clearing where a house had once stood. It would clearly seem as though certain varieties had a decided taste for human society, and were disinclined to settle down in a wilderness that is all but untrodden by the foot of man.

Two of the less conspicuous kinds found in Pennsylvania were, however, noted here, though not in great abundance—the Sweet Goldenrod (*S. odora*), and the White Goldenrod (*S. bicolor*.) There is a yellow variety of this latter species to be met with in the "barrens", but I did not chance upon it.

More attractive than either *S. odora* or *S. bicolor*, and more characteristic of these piney wastes, was *S. puberula*, which proved quite abundant. It is a beautiful, slender-stemmed species, with flowers arranged in dense, spike-like panicles—sometimes at the summit of a simple stalk, and sometimes at the extremities of short branches. Very frequently both stems and leaves would be colored purple.

In damp savannas—open fields of Nature's own making among the pines—occasionally I would notice that the swaying wild grasses were flecked with clots of golden yellow, which upon nearer approach would prove to be the racemed flowers of *Solidago stricta*. Nothing could be lovelier than this rare species, its smooth wand-like stem clothed with small upright leaves, pressed flat to its side. It is truly a *rod*, though golden only at the tip.

Once, at the edge of a dark cedar swamp, *S. linoides* (or variety *linoides* of *S. neglecta*, as some botanists describe it) was found—a smooth graceful plant, with shining stem, neat, trim-looking leaves, and clusters of bright flowers arranged in drooping, one-sided racemes—the heads of blossoms often with two or three ray flowers. The involucral scales of both this species and *stricta* were, in the plants I saw, almost pure yellow, as though the limpid color of the flowers had soaked through!

Another characteristic *Solidago* of the "barrens," I found to be *S. pilosa*. This, at its best, is a stately plant, the height of a man or taller, the stalk surmounted by a pyramid of feathery bloom. The stem is very hairy; and the sessile, almost clasping leaves, stand conspicuously out from it on all sides, nearly at right angles.

S. tenuifolia, of which mention has already been made in another article in the MONTHLY, was frequently encountered; and as the eastern limit of the woods was reached, and the meadows of the coast came in sight, the handsome Seaside Goldenrod (*S. sempervirens*) would be met with—a showy species, short of stem and leaf, and emitting, when broken, an odor almost resinous.

C. F. SAUNDERS.

Philadelphia.

LOBELIA CARDINALIS. — The tendency to vary from more fixed conditions is what gives the florist his first chance for breaking up what seems to be a regular course of behavior. The departure is taken care of, and the seedlings found to vary very easily in other directions. These primary variations occur in wild

Nature, as well as when the plants are growing in garden borders; but they are not often noted. The florist is looking for them, while the admirer of wild flowers is not. Once in a while, however, some striking form turns up. Mr. Chester Davis, of Wynnewood, Pa., sends a spike of *Lobelia cardinalis*, the flowers of which are light pink. Pure white is not uncommon.

THE COOLING OF THE EARTH.—Many trees that formerly flourished in the North of France, are no longer found except in the extreme south, and a large number of species have entirely disappeared. The lemon no longer grows in Languedoc, and an orange tree cannot be found in Roussillon. The Italian Poplar, so common and picturesque in ancient French etchings, is to-day rarely found on French soil. These facts of nature go to prove the changes of temperature in France, the old fruit garden of Europe. S. D. L.

Translated from *La Semaine Horticole.*

THE DEGENERACY OF STRAWBERRY PLANTS.—There is no degeneration of strawberry plants that I can perceive. The blight is on the leaf, and it has always been there. It is on the leaves of the wild plants. The strawberry fungus always had its home on that plant. Among the cultivated sorts, there are always some plants or varieties which have it worse than others. But the blight does not cause the degeneracy of the plant, in fact, there is no degeneracy there, but rather it is found in methods of cultivation and in opinions of men who desire to stop one variety to take up with a higher and better sort. It is not the plant, but it is the opinion of man,—only an opinion. To find out whether the strawberry plant degenerates or not, it is easy for me, as I am living among fruit growers who cultivate and have cultivated old varieties, to compare them as I knew them fifteen or more years ago. I cultivated in the East, about twenty years ago, the Cumberland Triumph, Capt. Jack and Crescent. When I came here three years ago, I found them being cultivated by the small fruit growers, and they think that there are none better. Their mode of cultivation is planting single plants early in the spring, they allow them to bear two years and then plow them under. All authorities say that strawberries, to do well, should not be allowed to occupy the same ground longer than two years, thus showing the cause of the degeneracy to be exhaustion of the soil. Every plant requires a different treatment. Because peach and apple trees give a crop for many years, that is no reason that we should expect a strawberry plant to do the same. Then compare the roots of a strawberry plant with the roots of a peach tree. The former's roots cannot wander to a distance in search of food, while the latter's can. As all plants require a different treatment, we should not expect to grow corn and cotton as we do wheat and oats. The above strawberry plants have not degenerated here. The fruit growers still claim the present berries to be the equals of their first crops grown fourteen years ago. Strawberry plants follow the fashions to a small extent, something better taking the place of something which is not quite so good. We can purchase the Wilson's Albany to-day and plant them alongside of the Brandywine. When they are in fruit, we will examine them—we will compare them—and the comparison will be so much in favor of the Brandywine that we will chop up the Wilson. Not because of any degeneracy in the Wilson, for it will produce as fine berries and as many of them as in the days gone by, but because the Brandywine is so much better in every way. I have the Shuster's Gem, an old fashioned variety, growing in my garden. It is the most beautiful berry that I have, more beautiful than any I ever saw. It is a pistillate and very productive; and these are the berries which show better and sell better than the old-fashioned Cumberland, Capt. Jack and Crescent, which are grown by the neighboring fruit growers. Something better always drives away something which is not quite so good throughout this world, and this is the only reason of the degeneracy of the strawberry plant.

Festus, Mo. F. K. STEELE.

SPIRANTHES CERNUA.—A friend who finds *Spiranthes cernua* abundant in her neighborhood this year, informs me that the spiral arrangement is directed to the right in some plants and to the left in others, seeming to be always quite impartial as to direction. I have seen lima beans climb to the right and to the left in the same patch. S. NEWLIN WILLIAMS.

GENERAL GARDENING.

CONSOLATION OF THE ROSE.

"Though of both leaf and flower bereft
Some ornaments to me are left—
Rich store of scarlet hips are mine."

AERATING THE SOIL.—As far as we can judge from horticultural literature, the knowledge gained a generation or two ago, that the roots of plants require air as well as the leaves, has almost died out. Taking up the gardening papers of that period, we find articles from the present head of the Experimental Garden at Washington, Mr. Wm. Saunders, showing the absolute necessity of aerating the soil in order to get the best results for cultivation; and this idea was taken up and reiterated everywhere, until it seemed to be generally prevalent. At that time it was difficult to find a gardener of any intelligence but who seemed to thoroughly understand the point. It was chiefly to this end that advantage was found in under-draining. There was a time, when placing drains under the surface was started, that it was laughed at by the so-called "practical man." "Draining the ground!" said he, "Why the ground gets as dry as dust in the summer time; and everything dies out for the want of water. Why should we drain away the little water that it holds?" But the under draining was more for the purpose of admitting air to the soil than water. When the water was allowed to pass rapidly through the earth into the under-drains, the air followed; and in this way the atmosphere was believed to do its full share of the work required. In like manner, rolling the ground after seeding was not so much for the purpose of pressing the ground tight, but for pulverizing the clods, forming thousands of small air spaces, where none existed before. It is in this line, indeed, that we have to look for the death of trees, which often follows filling up with earth over their roots. When the filling is done with earth full of broken bricks or stones, or with pure sand or gravel, the tree does not die, although the filling may be several feet in depth; but when filled with ordinary clay soil, death almost always follows. In the former case, air is still conveyed for the use of the roots; in the latter case, the air is excluded. It is for the same reason that trees are killed by a sudden overflow of water in the summer time. Being absolutely under water, the air is completely excluded. It is the absence of air which causes their death. If the cultivator would thoroughly understand the advantage of air about the roots, much greater success would follow his efforts than is frequently in evidence.

CHESTNUTS AS FOOD.—Many chestnuts are superior to potatoes for food. There is as much azote matter in a kilogram of chestnuts when the kernel contains 50 per cent. of water, as in half a kilogram of bread. When dry, it has at least four times as much sweet and feculous matter as the best kind of a potato.

In many of the provinces of France, chestnuts annually contribute a large part of the public food.

A doctor from Pietra Santa says that the chestnut groves during a large part of the year yield the principal nourishment to the poor of Cévennes, Limousin, and the Corse. Cakes are made from chestnut flour which will last a long time.

By mixing the flour in a little salted water, a bouillon is made which is very agreeable, especially if a little fresh milk is added to it. It was the *polenta*, a favorite food of the agricultural population of the ancient duchies of *Lucques* and *Modène*. These people never ate meat, nor drank wine, and they worked from ten to twelve hours a day; they often lived in close huts and yet enjoyed perfect health and great muscular strength.

The principal value of the chestnut is its easy digestibility over all other flours, especially when boiled or baked.

Translated by SARAH D. LANNING.
From *La Semaine Horticole.*

FRENCH NAMES FOR GARDEN IMPLEMENTS.—A pruning knife is a *Serpette*. Pruning shears are *Secateurs*. Strong grafting knives are *Greffoirs*. A watering hose is *tuyaux d'arrosage*. A grass rake *Rateaux d'etang*. Tweezers for use in cross-fertilizing *Pinces à pollen*. A water pot *Arrosoir*. *Tondeuse* is the lawn mower.

FAST GROWTH OF THE KUDZU VINE.—The Kudzu Vine, *Pueraria Thunbergiana*, better known as *Dolichos Japonicus*, is known as one of the fastest growing vines in cultivation. Passing a vine recently which had several shoots prostrate on the ground, the position of three of them was marked. At the same hour on the following day, a measurement was taken, and it was found that the growth made in the 24 hours corresponded to the vigor of the shoots. The strongest one had lengthened 3½ inches, the next 3 inches, and the weakest 2 inches. At this season of the year, October, the growth is probably not as rapid as earlier in summer.

JOSEPH MEEHAN.

PRUNING FLOWERING SHRUBS.—Complaint is frequently made that flowering shrub bushes get too strong at the top and weak at the bottom, instead of forming the shapely specimens so much desired. This can be easily remedied by pruning in early summer. If the strong shoots which make all the trouble are cut as near the ground as possible, the sap which would flow into them goes into the weaker ones, and in this way a uniformity of growth occurs throughout the whole. This is the only way to make shapely specimens. If left until winter, and then simply sheared back, as is so often the case, the top branches grow stronger than ever the next season, and the whole is made worse instead of better.

THE APPLICATION OF MANURES.—Wherever experiments have been carefully made, the results have been to show that the value of manure to a plant is in reverse proportion to the depth at which it has been placed in the earth. The nearer the surface, the more effective the manure is. This arises from the fact that the feeding roots of a plant are nearly always at the surface. Manure has to be acted upon by the gases of the atmosphere before the plant can develop any benefit from it, and the roots seem to understand this, and come near the surface where the atmospheric air can operate on the food they have to collect. While this is an abstract principle, the best system of applying manure is by top-dressing. There is the counter trouble of evaporation, and some of the most desirable gases are lost by the top-dressing system. On the whole, therefore, it has been found that the most judicious method of applying manure is to spread it on the surface and then rake it in.

CUTTING OFF LARGE BRANCHES OF TREES.—Horticultural teachers are frequently discouraged by what seems to be the slow progress of the adoption of horticultural practices. Over, and over, and over again, the same lessons have been repeated, and over and over again have the lessons been lost. Sometimes, however, progress seems slower than it really is; and this is especially true in relation to the pruning of trees, where large branches are concerned. It ought to be in evidence to the commonest observer that, when a stump is left inches, and even feet, from the main trunk, the stump subsequently rots, and the rot is communicated to the heart of the tree. One would think, from these experiences, that not a stump would be left in this condition; but that the branch would be cut close to the trunk, and then the wound painted, to keep the surface from rotting until new bark had time to grow over and completely cover the wound. During the past year or so there has seemed evidence that this fact had penetrated the public brain. There has been more testimony this year, that the point is being understood, than we have ever noted before. It is a comfort to feel that, for once, efforts are producing some good results.

TREATMENT OF WET WASTES.—The illustration presented with this shows the greatest portion of a depression 100 x 192 feet which was too wet for cultivation. It was seldom one could cross it without getting wet feet; its only use was to grow the few forest trees, ferns and water weeds. We made the pool on the right, 190 feet by 10 feet and four feet deep, which gave one foot of water in dry times. The earth taken out was used to raise the lowest part, and blackberry and raspberry

plants were set among the trees, and strawberry plants on the more sunny portion. A second pool was made, 12 x 30 feet, running at a right angle with the first one, from near where the workman stands, and connected with the first by drain pipe. The pools are planted with pink pond lilies (*Nymphæa odorata rosea*) and stocked with gold fish. The fish are necessary to keep the insects in check, and readily sell in the cities. We have picked from 100 to 250 flowers per week since the last of May, and they continue to bloom until September. On the right, there is a good crop

TREATMENT OF WET WASTES.

of corn where it was formerly too wet for most crops. The forest trees are trimmed up so as to let the sun in at some time during each day. On our hottest days, the sun cooked the blackberries where most exposed; but on the north of the thicker portion of the trees, where only the morning and evening rays reach the fruit, we are now—August 14th—picking luscious Minnewaska berries quite superior to those which grew in the more sunny part. Back of the workman stands a bush of swamp huckleberries; and to his right, a May Cherry (*Amelanchier Canadensis*.) On the right or north bank of the pool, a row of magnolias was started, one of which bloomed this summer.

This farm contains 20 acres, of which the depression occupies nearly one-half acre; and there is not a farm in this section but has as large a percentage of wet, waste land, which would grow forest trees with no expense other than of the planting; and if treated, as this shown in the cut, may be more profitable than other portions of the farm. Along the creeks are large areas, below high tide, which might be banked with sluice gates, and pumped out with wind or tide power, which also might pump into reservoirs for irrigating dryer portions of the farms.

Educational Use.—We have long advocated the teaching of natural science in our schools, especially the botanical branch, and as our public school is on the front of the farm, we occasionally invite the teacher and pupils to see the lilies, and have an hour or two of study in natural science. To overcome the very general objection to those "horrid botanical names," we write the systematic names on slips with phonetic spelling, and pin them on the trees so the pupils may readily read and pronounce them.

R. BINGHAM.

FRENCH NAMES FOR GARDEN IMPLEMENTS.—A pruning knife is a *Serpette*. Pruning shears are *Secateurs*. Strong grafting knives are *Greffoirs*. A watering hose is *tuyaux d'arrosage*. A grass rake *Rateaux d'etang*. Tweezers for use in cross-fertilizing *Pinces à pollen*. A water pot *Arrosoir*. *Tondeuse* is the lawn mower.

FAST GROWTH OF THE KUDZU VINE.—The Kudzu Vine, *Pueraria Thunbergiana*, better known as *Dolichos Japonicus*, is known as one of the fastest growing vines in cultivation. Passing a vine recently which had several shoots prostrate on the ground, the position of three of them was marked. At the same hour on the following day, a measurement was taken, and it was found that the growth made in the 24 hours corresponded to the vigor of the shoots. The strongest one had lengthened 3½ inches, the next 3 inches, and the weakest 2 inches. At this season of the year, October, the growth is probably not as rapid as earlier in summer.

JOSEPH MEEHAN.

PRUNING FLOWERING SHRUBS.—Complaint is frequently made that flowering shrub bushes get too strong at the top and weak at the bottom, instead of forming the shapely specimens so much desired. This can be easily remedied by pruning in early summer. If the strong shoots which make all the trouble are cut as near the ground as possible, the sap which would flow into them goes into the weaker ones, and in this way a uniformity of growth occurs throughout the whole. This is the only way to make shapely specimens. If left until winter, and then simply sheared back, as is so often the case, the top branches grow stronger than ever the next season, and the whole is made worse instead of better.

THE APPLICATION OF MANURES.—Wherever experiments have been carefully made, the results have been to show that the value of manure to a plant is in reverse proportion to the depth at which it has been placed in the earth. The nearer the surface, the more effective the manure is. This arises from the fact that the feeding roots of a plant are nearly always at the surface. Manure has to be acted upon by the gases of the atmosphere before the plant can develop any benefit from it, and the roots seem to understand this, and come near the surface where the atmospheric air can operate on the food they have to collect. While this is an abstract principle, the best system of applying manure is by top-dressing. There is the counter trouble of evaporation, and some of the most desirable gases are lost by the top-dressing system. On the whole, therefore, it has been found that the most judicious method of applying manure is to spread it on the surface and then rake it in.

CUTTING OFF LARGE BRANCHES OF TREES.—Horticultural teachers are frequently discouraged by what seems to be the slow progress of the adoption of horticultural practices. Over, and over, and over again, the same lessons have been repeated, and over and over again have the lessons been lost. Sometimes, however, progress seems slower than it really is; and this is especially true in relation to the pruning of trees, where large branches are concerned. It ought to be in evidence to the commonest observer that, when a stump is left inches, and even feet, from the main trunk, the stump subsequently rots, and the rot is communicated to the heart of the tree. One would think, from these experiences, that not a stump would be left in this condition; but that the branch would be cut close to the trunk, and then the wound painted, to keep the surface from rotting until new bark had time to grow over and completely cover the wound. During the past year or so there has seemed evidence that this fact had penetrated the public brain. There has been more testimony this year, that the point is being understood, than we have ever noted before. It is a comfort to feel that, for once, efforts are producing some good results.

TREATMENT OF WET WASTES.—The illustration presented with this shows the greatest portion of a depression 100 x 192 feet which was too wet for cultivation. It was seldom one could cross it without getting wet feet; its only use was to grow the few forest trees, ferns and water weeds. We made the pool on the right, 190 feet by 10 feet and four feet deep, which gave one foot of water in dry times. The earth taken out was used to raise the lowest part, and blackberry and raspberry

plants were set among the trees, and strawberry plants on the more sunny portion. A second pool was made, 12 x 30 feet, running at a right angle with the first one, from near where the workman stands, and connected with the first by drain pipe. The pools are planted with pink pond lilies (*Nymphæa odorata rosea*) and stocked with gold fish. The fish are necessary to keep the insects in check, and readily sell in the cities. We have picked from 100 to 250 flowers per week since the last of May, and they continue to bloom until September. On the right, there is a good crop

TREATMENT OF WET WASTES.

of corn where it was formerly too wet for most crops. The forest trees are trimmed up so as to let the sun in at some time during each day. On our hottest days, the sun cooked the blackberries where most exposed; but on the north of the thicker portion of the trees, where only the morning and evening rays reach the fruit, we are now — August 14th — picking luscious Minnewaska berries quite superior to those which grew in the more sunny part. Back of the workman stands a bush of swamp huckleberries; and to his right, a May Cherry (*Amelanchier Canadensis.*) On the right or north bank of the pool, a row of magnolias was started, one of which bloomed this summer.

This farm contains 20 acres, of which the depression occupies nearly one-half acre; and there is not a farm in this section but has as large a percentage of wet, waste land, which would grow forest trees with no expense other than of the planting; and if treated, as this shown in the cut, may be more profitable than other portions of the farm. Along the creeks are large areas, below high tide, which might be banked with sluice gates, and pumped out with wind or tide power, which also might pump into reservoirs for irrigating dryer portions of the farms.

Educational Use.—We have long advocated the teaching of natural science in our schools, especially the botanical branch, and as our public school is on the front of the farm, we occasionally invite the teacher and pupils to see the lilies, and have an hour or two of study in natural science. To overcome the very general objection to those "horrid botanical names," we write the systematic names on slips with phonetic spelling, and pin them on the trees so the pupils may readily read and pronounce them.

R. BINGHAM.

INTENTIONAL SECOND EXPOSURE

SILICATES AS MANURE. — The stems of grasses, sedges, and equisetums contain relatively large amounts of silica. The ash of wheat is nearly half silica. For a long time it was supposed that its function was to give strength and rigidity to the stems. But this is now disproved. Wheat stems have been examined and the silica is found to be not in the walls of the cells, but between them in the form of small separate plates. So far from strengthening the slender stems, it only adds to the weight of the load to be supported by it. Moreover, even if the epidermis were composed of a sheath of silica, it would be but ill adapted to the function of strengthening the stem, since it is extremely brittle. But the best evidence against the former view comes from the careful experiments of such scientists as Lawes & Gilbert. During twenty years they carried on experiments, and found that a large percentage of silica is uniformly associated with a bad condition of crop. There is under even conditions more of a tendency to "lodge," as farmers express it. Repeated analysis of "lodged wheat," by other chemists, show that it contains 70.7 per cent. of silica against 65.3 per cent. in unlodged. Further experiments show that strength of straw is a matter of exposure to light and air, rather than of the percentage of silica in the stalks. A test showed that 10 stalks selected from thinned wheat in natural soil would support 104 grammes; while an equal number of stalks from unthinned wheat manured with silicate of potassium would support but 77 grammes.

Experiments of Sachs, Stohmann, Wolff, Knop and others show that plants ordinarily rich in silica may be grown as well without silica as with it, as far as the plant and not the fruit is concerned, and that it is not at all essential to stiffness of stem.

While not necessary in this respect, it is now generally admitted that silica has a favorable influence upon the fruiting or yield. Wolff has shown that in the case of oats, plants supplied well with silica give much the largest number of seeds, as well as the largest weight—this being in the case of plants well supplied with silica twice as great as of those denied it. His conclusion was that silica favors the timely and uniform ripening of the crop and favors the maximum development of seed. Another experimenter shows that calcium carbonate may take the place of silica and answer the same purpose. The favorable influence of these ashy constituents is thought to be of a mechanical nature, resulting from a clogging of the cells, and a retarding influence upon their growth.

As for the silica in the stalks of grasses, the view widely accepted is that its function is a protective one. In the case of hollow stemmed plants, the bite of an insect on the stem is more serious than to a solid stemmed one. Yet the stems of the sedges are for the most part solid. In the case of *Equisetum hyemale*, I have often noticed that the hollow internodes are always about one third or half full of water in the winter time. What effect a puncture of one of the internodes could have upon the plant or its growth, I do not know. The stems of this plant are uncommonly rich in silica, or well protected—so much so that when burned or macerated in strong nitric acid with a few crystals of potassic chlorate added, a beautiful skeleton of silica is left behind. From this feature, the plant was formerly used for polishing metal and wood, and received the popular name of "Scouring Rush."

It may be that the gathering of silica by these plants has relation to some matter in the economy of nature by which other additional ends than those of self-protection are subserved, since, as Darwin has said, "the structure of every organic being is related in the most essential, yet often hidden manner, to that of all other organic beings."

Whatever be its office, we need go to no expense to provide silica for our crops, since the natural supply is always sufficient—there being, according to one authority, probably 1000 pounds of silica in soluble form to every acre of soil. Were it necessary, or even desirable to supply it, the silicate of potassium would be the best form. This salt affords silica in the soluble state, which is the only way any such substance can ever get inside the plant. There is not in the roots, or root-hairs, any openings by which the finest particle of solid matter can enter, though it were hundreds of times finer than the smallest diatom.

New Albany, Ind. ERNEST WALKER.

Part of this instructive paper appeared in our last issue.

SOWING FERN SPORES. The question is asked: "Of what use can the soil be 2 or 3 inches below the spores in a pot where these have been sown on small pieces of brick placed on top of soil, as mentioned in the September MONTHLY?" This soil is simply to hold moisture for the brick to absorb, without which, the application would be insufficient by reason of the rapid passage of the water.

BLUE FLOWERED HYDRANGEA:—A correspondent writes: "Referring to what is said concerning blue-flowered *Hydrangea Hortensia* in the October number of the MONTHLY, my experience confirms the suggestion that when these plants are growing out of doors permanently, the flowers come blue. This hydrangea is a favorite about Philadelphia, and in many private gardens and in cemeteries it has been planted, and almost without exception the plants produce blue flowers. This is particularly noticeable at Laurel Hill Cemetery, where I am sure I have seen as many as twenty-five plants scattered about the grounds and all producing blue flowers. It does not seem to be a question of vigor, for no matter how vigorous a pot-grown one may be, the flowers rarely come blue."

CLOVER DODDER.—A correspondent says:—"The enclosed sample of weed' is sent by a friend in Lancaster County, Pa., who found it, in small patches, growing in his clover when first cut for hay. He states that the field is bare on all the spots where this weed was found. He thinks of cutting a second crop for sheep, and asks whether it is safe on account of spreading the seeds or roots of the plant which, he takes it, is of a parasitic nature, and does not root in the ground. Can you give any information in relation to it?"

This is the notorious Flax or Clover Dodder, *Cuscuta Epilinum*. The seeds germinate in the ground, but after the young plants find the clover to attach to, they cut loose from Mother Earth, and live wholly as parasites on the clover or flax plants. The specimens were already in seed-bearing state, and, to make hay of it, would only be to scatter these seeds far and wide. As the seed is now in the ground, a few more will not hurt, and the clover can be utilized by being fed on the ground, though the sheep might carry away enough to start a new centre in their wool. The safest way would be to cut and burn at once. Next year, it must be attacked before it flowers. The yellow, leathery threads that constitute the plant can readily be detected in time by any wide awake person.

Pennsylvania, it is understood, has a law against weeds. Where are the Commissioners when they let serious cases like these go by? A commissioner, to be worth his salt, should be able to give the information asked here.

DISADVANTAGES OF BORDEAUX MIXTURE.—It might help the reader to know that the unsightly and distasteful spots, which cover the grapes now ripe, may be removed almost instantly, by simply dipping the bunch into dilute acetic acid, or, say, equal parts of vinegar and water. Another dip into pure, cold water speedily removes the vinegar, and the grape is as delicious as if it had never been marred by the spots. THOMAS M. TYSON, M D.

NEW OR RARE PLANTS.

STYRAX OBASSIA.—One of the most distinct trees of Japanese introduction, of late years, is the *Styrax Obassia*, which belongs to the same family of plants as the well known *Halesia*, or Snow-drop Tree. The large, broad leaves, widely scattered along the branches, give it a very different appearance from other trees of the same family. Those who love to watch the varied methods by which trees accomplish the same thing, will be interested in noting how the plant, in this case, throws off its outer bark. A sudden rift occurs down the whole length, from one leaf to the next beyond, and the cuticle peels off in a single sheath. The tree is, in many ways, interesting as well as beautiful. It is a small tree, having, in this respect, the same character as the Snow-drop Tree before referred to.

THE SAVIN AS AN ORNAMENTAL EVERGREEN.—C. W. Green aptly observes:

"It occurs to me that the common Ground Savin of the far north of America (found in New England commonly also), would be a fine lawn plant. It often grows as flat as a plate, and as round as a dollar. It is a fine, dark evergreen. I have seen it 15 feet across; often 2 or 3 feet. It grows often on very poor soil."

CALYCANTHUS OCCIDENTALIS.—The Pacific coast Sweet Shrub, *Calycanthus occidentalis*, is of value to those to whom the odor of "shrub" flowers is so pleasant, because of its flowering later than other kinds,—fully a month later than *floridus* and *lævigatus*, the two common in cultivation. As with other shrubs from the same locality, it is not over hardy in Philadelphia, while hardy enough for practical purposes, as it is but the tops that get injured in severe winters, and this does not prevent in the least its flowering. Both its flowers and leaves are larger than those of either of the others, and the flowers are possibly of a brighter color. In regard to the odor of the flowers, taking the three kinds, *floridus* is thought to be much the sweetest of all in this respect. JOSEPH MEEHAN.

ACIDANTHERA BICOLOR.—A Newport, R. I., correspondent says:—

"I have sent you, to-day, sample bloom of a bulbous plant which is as yet quite scarce here, but is grown in considerable quantity on the Cornelius Vanderbilt Estate by Mr. Robert Laurie, the gardener, from whom I obtained the flowers sent. The flowers are said to be quite fragrant, but I fail to detect any smell whatever in them, which is strange, as I have no trouble whatever in discerning the fragrance of other flowers.

I have not yet learned where it is a native of. It is known here under the name of *Acidanthera bicolor*. Can you give us any information regarding it?"

It was a pleasure to see this beautiful plant for the first time "in the flesh," as one might say. It is so different from examining dried specimens, or from reading descriptions in books. The flowers have the appearance of small tulips, pure white with brownish-purple at the base, and are borne in large trusses. It is an iridaceous plant, closely allied to *Sparaxis*, *Crocosma*, *Tritonia*, and similar genera; its native home is sub-tropical Africa.

THE HARDY FLOWER GARDEN.

RUDBECKIA LACINIATA "GOLDEN GLOW."—In the September issue of the MONTHLY, mention was made, on page 174, of the new *Rudbeckia laciniata* "Golden Glow." A constant reader and close observer asks in what sense it is "new." The species is not a new one, as he states, but the variety introduced under the common name of "Golden Glow" is. Although introduced but two or three years ago, it has already become quite familiar in American and European gardens, winning praises from everyone.

Another correspondent fond of testing various plants, new and old, says his plants of this variety were exceedingly fine the past season. He laid a drain pipe leading to the roots, supplying plenty of moisture throughout the summer. The full height of the plants was 8 feet.

The show of color, produced by the abundance of its flowers, with such a height, makes it desirable for planting in beds of shrubbery, where it will brighten up the group at a season when it will be most appreciated. It multiplies rapidly and uniformly by stooling up from the roots.

PERMANENT PLANTING OF HARDY BULBS.—There are many beautiful hardy bulbs that will take care of themselves in the border, and no flower garden can afford to be without them. Perhaps one of the showiest, is *Tulipa sylvestris*, a group of which makes, in its clear bright yellow flowers, one of the prettiest displays imaginable, in April and May. The leaves are narrow and prettier than those of the kinds usually planted for temporary effects; the flowers are quite fragrant. There are a number of others that would doubtless do as well and be equally as interesting.

Many of the Narcissus thrive undisturbed; but one that has given the writer considerable pleasure is *N. biflorus*, a pure white hybrid, blooming in May. As the name implies, two flowers are usually borne on one stem. It is deliciously fragrant, and very much like one of its supposed parents, *N. poeticus*.

Although by no means as showy as those already mentioned, *Leucojum æstivum* should perhaps be ranked as next in attractiveness. The individual flowers are small, bell-shape, opening two or three at a time on one rather tall stem, and gracefully drooping; the color is of a good white, greenish at the base on the outside. They are excellent for cutting, lasting well and opening buds. Blooming in late spring, they complete a nice succession.

The well-known Snowdrop is one that cannot be dispensed with. *Galanthus Elwesii* is said to be the best, though the writer's experience has been confined to the common species, *G. nivalis*. This frequently blooms, in Philadelphia, before the close of winter, a few days of warm sunshine bringing out the tiny flowers, which droop modestly as though abashed at their early appearance. The last snow-fall sometimes catches them, but without doing serious injury. This, with the *Leucojum* and well-known Crocus, is all the better for being undisturbed for four or five years,—or until the increase makes them crowded. Planted 3 inches apart, and about 4 inches beneath the surface in deep, well-drained and enriched soil they will give greatest satisfaction.

While September and October are usually the best months for planting hardy bulbs, do not omit them because it is getting late and November is at hand. As long as the soil can be worked, they will generally do well,— in fact, they have been occasionally placed in holes made in frozen ground. But this method is by no means to be advised. If the soil is heavy, a little sand should be placed under each bulb.

THE PRETTIEST GOLDEN-ROD.—S. M. says:—"The story of the golden-rod is getting especially interesting. When the vote comes in the question of the prettiest golden-rod, for the flower garden, mine will be recorded for the *nemoralis*. Out of some half dozen species I have growing, this is by far the handsomest. I can imagine none more truly grand. It comes in after the *Canadensis* is over. I hope this challenge on the golden-rod question will not produce the same dire results as followed the race for the golden apple in Queen Helen's time."

EUPATORIUM AGERATOIDES.—Admirers of our native flowers frequently complain of a difficulty in transplanting them from the open woods to the garden. In *Eupatorium ageratoides*, no trouble of this nature is experienced, and an excellent flower for garden display or for cutting purposes is had. The plant is a composite, the white flowers much resembling ageratum, for which character it has received its specific name. A large vase of these flowers is delightful, and they will last for fully ten days. In the edges of woods, it may usually be found, and transplanted about the close of September.

FRUITS AND VEGETABLES.

CAMPBELL'S EARLY GRAPE.—Some specimens on our table, from Mr. Geo. S. Josselyn, show Campbell's Early to be a very handsome grape, and one likely to be popular. The berries are large, of a shining black, and the bunch well formed. They weigh about half a pound. It belongs to the same class as the Concord, and is of equally good flavor.

THE PLUM WEEVIL.—The weevil usually known as the Curculio is a small beetle that deposits its egg in the plum, cherry, peach and apricot, making a small crescent-shaped mark when puncturing the fruit. The egg soon becomes a little worm. By the time the worm is ready to undergo its transformation in the earth, by a wise provision of Nature, which the insect would seem to have had foreknowledge of, the fruit rots, falls to the ground, thus enabling the insect to crawl easily from the fruit to the earth. It is the one great foe to the success of the fruit culture.

DESTROYING SCALE.—This magazine has always contended that the oppressive legislative methods of dealing with insects on the farm and garden are worthy only of the dark ages. The man who sends out scaly trees should be punished, and no one else. Any one who removes the scale from his eyes can see a scale insect and destroy it easily by lime wash, as the MONTHLY has repeatedly stated. The London *Gardeners' Chronicle* repeats this. It says:—

"We hear of all sorts of remedies for scale, but none is so good as the old one of whitewashing the trunk and limbs of, say, a plum, pear, orange, or fig-tree. If there are many small shoots that require removal, see that this is done before the lime-washing takes place. *Nerium Oleander* is apt to be badly infested with white scale, and a lime-wash applied in the winter will remove these. Applied to the stem and limbs of orchard-trees, it clears them of moss and lichens, although æsthetic folk may not admire the appearance of the trees so treated, and will contend that less unsightly means might be taken to kill the moss, etc. The chief thing, however, is freeing the trees from the parasitic growths, and maintaining them in good condition."

PRUNING GRAPE VINES.—It is very difficult in studying history to decide what were mere after-thoughts and what did actually occur at the time stated. It is considered, for instance, that the grape growers of the very olden times knew nothing of the advantages of grape pruning. From what we have learned of the good fruits these ancients produced, it is very doubtful whether this is the exact truth. They probably knew as much of the advantage of grape pruning as we do. However, the veracious historians say not. They tell us that once upon a time a drove of asses got into a grape vineyard and browsed on the vines. The owner was naturally vexed, but to his surprise the next year brought him immense crops, with the fruit of wonderful size and quality, much to his astonishment and much more to his profit. It is said that after this unfortunate or fortunate experience, the practice of pruning grape vines began. A horticultural commissioner in California, however, does not seem to put much faith in this ancient study. He would have it, that the Jack-asses, if they did get into this orchard, must have been disastrous, for he winds up his annual report by saying,—"that, so far as Californian vineyards are concerned, it is evident that there are too many Jack-asses turned loose among them."

SEEDLESS FRUITS.—Apples, pears, grapes, oranges, the Osage Orange balls and many other fruits occasionally produce individuals that seem to have perfect fruit, but are really seedless. Referring to the Navel orange, which is a seedless one, the New York *World* says it is a perversion of natural law, a betrayal of nature, or defiance of all the laws of natural selection, and the so-called law of natural selection has been tried in the balance and found wanting. In these modern times we find that there was a general harmony in the appearance of nature, that one class of seed is made dependent upon another class, and that one class in many cases cannot possibly exist without the other. A plant, therefore, does not exist wholly for itself. One might suppose that the great object in the life of a plant is to make seed with which to perpetuate a race. But a plant makes hundreds of thousands of seeds more than are required for this simple purpose. Yet this immense superabundance has a purpose. That purpose is to feed living creatures. It is just as much an evidence of foresight that plants were made to minister to the wants of others as well as to their own wants. There is just as much reason, therefore, for saying that seedless fruit is purposely provided for as to say that there is a purpose in the production of fruit with seed. They perform one of the great objects for which intended, namely,—the furnishing of food to other creatures.

WEARING OUT OF VARIETIES.—It is well-known, especially in connection with some of our fruits and vegetables, that varieties do seem to deteriorate under long-continued cultivation, and that it is necessary to keep up a supply of new varieties, in order to have the best results. Even among these, however, as has recently been shown in connection with strawberry-growing, there are varieties that will keep healthy, in some locations, much longer than they will in others. It is not regarded, however, as any proof that varieties necessarily run out, but that some disease has followed the plants during their propagation and dissemination. Among fruits, there are a number which have been propagated continuously for ages, yet which are just as good today as they ever were. The Black Hamburg Grape is a familiar illustration. Notwithstanding the many ages during which this has been propagated and repropagated, no one, today, would for a moment contend that it shows any decline. Many other similar illustrations may be adduced, among varieties of fruits.

THE JAPANESE CHESTNUT.—As is now well known among fruit growers, the Japanese Chestnut produces nuts of a large size,—much larger than the Spanish, or Italian, which in turn is larger than our native sort. It is not, however, so well known that this—the Japanese—is but a small tree, adapted to orchard growth, as are apples and pears. It has not been in cultivation here long enough for it to attain full size, but from its appearance and its fruiting quite young, it evidently is not of as large growth as the others mentioned. Trees of but twelve feet in height are often quite full of flowers; and in this condition are ornamental lawn trees, as well as desirable for their nuts.

CURRANTS.—It is well to repeat that the ordinary currants of the grocers is a kind of seedless grape,—a grape which never or rarely produces seeds. It first came into commerce from Corinth, and one of its great points of export was Zante. Our common name, curant, is a corruption of Corinth, and when we use the word Zante Currant this fruit is, of course, intended. But the currant of our garden is altogether another thing. It has no botanical relation whatever with the currant of commerce. It may, however, receive its name from some resemblance in form to the grape currant; but it is much nearer related to the cactus than the grape. It would be supposed that this difference would be recognized by every one, and yet strange to say the question, as to what is a currant, seems to give considerable trouble to custom house officials.

CELERY CULTURE.—Good celery—or we may say first-class celery—cannot be obtained without an abundance of water, for the plant is naturally a citizen of swamps. It is always best, therefore, to set the plants in shallow ditches, so that water can be more easily collected; and it is also very fond of high living, consequently no well-prepared manure is too rich for it. The quality of market celery has fallen off somewhat of late years, chiefly through the cultivators treating it to surface culture. When planted in the latter way, there is not the same advantage for blanching as when set in trenches. It is much easier to let down earth than it is to raise it.

COOKING POTATOES.—It is generally supposed that knowledge is gained by experience, and we frequently take the fact that a person has had experience as indications of merit; but it is a lamentable fact that, in the vast majority of cases, experience is no teacher. One would suppose that if experience led to such good results, well-cooked potatoes would be seen everywhere; yet a thoroughly well-cooked potato is a rarity. Just now, discussions are going on in the Old World, in papers devoted to house-hold subjects, as to the proper way to cook a potato, and it is amazing to read the vast variety of opinions concerning the proper method in which to make this vegetable presentable. There is one point, however, which is clear to every one, and should not be overlooked,—it is that nothing is so disagreeable as a potato that comes to your plate in a sodden condition. It is the practice to place them under cover at once on being taken out of the water in order to keep them hot. The steam condenses, in this case, which results in this defect. It is of course necessary to keep the potato warm; but some little time should be given to allow the steam to escape before being covered.

CHERRY—THE DIKEMAN.—Mr. S. D. Willard, of Geneva, N. Y., sends samples of this new cherry, which came to hand on August 20th. It is not so large as the Black Tartarian, but has the same solid flesh, good flavor, and shiny black color of that popular variety. Being nearly a month later, it should prove of great value It is remarkable that while some fruits are not valued when out of season, the cherry is always in season. At the present time there are no cherries in market. Cherries like the Dikeman would be at a premium offered now.

A FRUITFUL PEACH TREE.—A correspondent says:—"A peach tree branch twenty-two inches long, cut from a wildling, had thirty-three peaches on it. This tree was a natural seedling,—that is to say the tree sprang from a seed that happened to get where the tree stood, and not from a seed put on the spot with the express purpose of having a tree at that point. It does not always follow because a tree is cultivated and cared for, that it will bear the biggest crop. We feel sure that all of the thirty-three peaches would have ripened, for they were already starting to color. Can any one report better than this?"

AUSTRALIAN APPLES.—Australia is found to be such a favorite home for the apple that immense orchards have been planted and are now in successful bearing. They find they can get them to England and still successfully compete with Americans in a financial sense. Nearly a hundred thousand cases had been received in England up to the first of June, the bulk of them coming from Tasmania. One great advantage they have is in their period of ripening, as the English markets can be supplied after the American apples have disappeared.

BIOGRAPHY AND LITERATURE.

OLD FRIENDS.

Eternal blessings crown my earliest friend,
And round his dwelling guardian saints attend;
Blest be that spot, where cheerful guests retire
To pause from toil, and trim their evening fire.
Blest that abode, where want and pain repair,
And every stranger finds a ready chair:
Blest be those feasts with simple plenty crown'd,
Where all the ruddy family around
Laugh at the jests or pranks that never fail,
Or sigh with pity at some mouruful tale;
Or press the bashful stranger to his food,
And learn the luxury of doing good.

—OLIVER GOLDSMITH.

THE NEW YORK BOTANICAL GARDEN.—The great Botanical Garden, for which two hundred and fifty acres of land have been secured, is in a fair way toward being a grand success. There is some talk of comparing it with the Royal Garden at Kew. This will be a fair thing to do in the future, but all these institutions grow, and it is according with the character of the men in charge of them as to how fast the development goes on. Kew Garden costs the Nation about one hundred and fifty thousand dollars a year, and has but seventy acres; and when we consider that labor costs, in our country, nearly twice what it does in England, it cannot be expected that we can do in a hurry what Kew has taken so many years to accomplish.

The New York Garden, however, has the advantage of starting with Prof. N. L. Britton as the chief director in charge. This gives it at once a chance to flourish rapidly in the line of Kew. There were good botanists in charge of Kew for a number of years, but it had no particular impress on the advancement of botany and horticulture until Sir William Hooker was placed in charge, in 1841. He was one of the rare men who knew how to reconcile conflicting interests.

A garden devoted wholly to popular pleasure never becomes a successful botanical garden; while a garden devoted merely to strict scientific botany never receives the public support, and the money necessary to carry it on is not forthcoming.

Sir William Hooker managed to have something which interested all, from the Queen to the peasant. Where such men are found to be, the institution rarely wants for financial support. It is believed that Prof. Britton is in this respect the equal of his Kew predecessor in successful park management, and the belief that the New York Garden will, before long, become something of which the whole American nation will be proud, is widely entertained.

THE NAMES OF PLANTS.—When naming a plant in honor of some great man, liberties are frequently taken in the orthography, and very often the person chosen is more honored in the name than by anything special that he did to deserve it. The celebrated French botanist, Baillou, had the naming of a plant, from the island of Juan Fernandez, that had never before been named or described. From that island he had naturally the story of Robinson Crusoe in mind, and he thought, to honor Crusoe's man, Friday, he would give this plant his name; but he did not call it Fridaya, but translated it into the French name for Friday,—that is to say, the sixth day of the week, *Vendredi*, and the plant became described in the books as *Vendredia*. No one would ever suspect from this name that it was intended to honor Robinson Crusoe's sole companion on the desolate island.

W. A. STILES.—Mr. W. A. Stiles, well-known as the active Editor of *Garden and Forest*, died in Jersey City, on October 6th, in his 60th year. He was a graduate of Yale College, and a teacher in early life. Subsequently he was part of the Engineering Corps of the Union Pacific R. R. From his earliest years, he had a fondness for gardening, and his knowledge of this and kindred arts and sciences was singularly broad and accurate. His death is a severe loss to intelligent gardening in our country. He was one of the New York Park Commission.

LINNEUS OR LINNÆUS. — Biographers of Charles Linné, or Linnée, say that he was born, in 1707, at Reeshult, Switzerland. Being the son of a poor country clergyman, he had a long struggle against poverty. In his youth, he showed a marked taste for the study of vegetable life, but his father, not understanding his son's propensity, apprenticed him to a shoemaker. A neighboring doctor, named Rothman, noticing his rare talents, took him to his home, and gave him lessons.

Linné made great progress in medicine, entomology, and especially in botany. In 1727, he was sent to the Lund University, where his poverty was such that he often needed for the necessities of life, and was forced to wear the shoes of his companions after mending them, himself, with pasteboard. The learned Kilian Stobée pitied him, and in turn took him to his home, where he found a collection of objects in natural history, which still more excited his taste for science. He started an herbarium, while Stobée gave him the first principles of botany.

CHAS. LINNE.

The following year, Linné left for Upsal, where a strong friendship with young Artédi, who was, until his premature death, his rival,—but not in enmity. There, he had for his teacher, the celebrated Olaüs Celsius, founder of natural history in Sweden. The young naturalist's progress was so rapid that, at the age of twenty-three, he was given the professorship in the place of the aged Olaüs Rudbeck.

Linné was more especially celebrated for giving the nomenclature *bi-nominal*, and publishing *Philosophical Botany*, an admirable work. His theory of the sexual system,—a work of small value, and wholly abandoned to-day,—made him popular, because he brought to the doors of the more intelligent, the means of finding genera and species without the help of a master.

After his death, on January 10th, 1778, Linné became the god of botany; he was blest, sanctified, and adored in the temples, which were called Linnean Societies.

Translated from the *Lyon-Horticole*.

ORIGIN OF NAMES.—It is generally conceded, by English-speaking people, that such family names as Smith, Baker, Butcher and Armor, arose from well-known occupations of some one of the early founders of the families. It appears that this custom prevailed in the far-away past, as well as in more modern times. The famous Latin orator, Cicero, for instance, is said to have derived his name from an ancestor who was a famous grower of beans. "Cicer" is the Latin name for a small bean called Lentil, which constituted a very large portion of the food of these early people. Some one of them appears to have been a very famous grower of the Lentils, or, as they would say, "Cicers"; and it is very easy to see from this how "Cicero" was derived.

WOMEN GARDENERS.—It was a bold move to open the Royal Gardens at Kew to women students as well as to young men. But the women graduates are making their mark. One of them has been appointed head gardener to J. Brogden, Esq., of the "Iscoed" estate, Ferry Side, Wales,—the first woman, we believe, to get an appointment in this new field.

THE WATER GARDEN, by Wm. Tricker; published by the A. T. De La Mare Company. A truly beautiful and instructive book. In these days, when water plants are so generally grown, the book will tend to widen the taste, and instruct those who already grow them.

GENERAL NOTES.

A CONSIDERATE NOTICE.—In the course of his rambles over other people's property near large cities, the botanical collector now and then comes upon posted notices of warning to trespassers. When the education of the composers of these notices is limited, the signs are sometimes of considerable interest from a linguistic standpoint; as, for instance, the following, which the writer recently encountered:

NO TRESPASSING ALOUD.

The inference literally deducible from this would seem to be that, so long as the trespassing was conducted quietly, no exception would be taken to it! C. F. SAUNDERS.

Even those who can spell make amusement for us at times. In a recent letter, a correspondent assures us that he has had "considerable experience in painting flowers with his wife."

EDELWEISS MANUFACTURE. — These rare Alpine flowers are imitated by some industries in a singular way; the flowers are cut out of gray or whitish cloth, often from old Austrian army coats. The stuff is cut into little strips closely resembling the upper parts of the Edelweiss. The strips are then firmly fastened to some false plant and flattened, when it is ready to ornament the button-hole of the tourist, the corsage of the miss, or even figure in the herbarium of the young botanist. Is it not ingenious?

Translated from *La Semaine Horticole*, by Sarah D. Lanning.

ARBOR DAY.—When the Hon. Sterling Morton was Governor of Nebraska, — that State of all others which felt the want of trees in its territory,—he suggested the establishment of a special day on which instructive lessons should be given to children and others as to the value of trees. In this way Arbor Day was founded. It has been so successful in America that they are thinking of following our example in the Old World. We think, however, the sentiment is to be favored by the extension of fruit culture, and in England, the apple tree is the one proposed to be selected for the Arbor Day exercises.

TREE FROM A TOMB.—MEEHANS' MONTHLY has recorded trees growing from the mortar of stone walls, and on church steeples. It is said that a horse-chestnut several years old is still growing from a tomb inside an old church at Kempsey, near Worcester, England. The monument built in the church is to the memory of Sir Edmund Wylde, who died in 1620. The tree is now several years old, having sprouted in the crevices of the mortar on the back of the tomb, spreads towards the light, and forms a leafy canopy over the stone form of the old knight as cut on the surface.

MEDICINAL PLANTS.—The Smithsonian Institution has undertaken to publish a complete Medicinal Flora, and invites any and all to send specimens of plants, noting the evils they are supposed to cure, or the injury they do, to the Smithsonian Institute. A circular has been issued, in relation to the subject, which may be had by application to the Secretary of the Institution, Washington, D. C.

SMALL PARKS OF LONDON.—The city of London now purchases cemeteries which are located at some distance from its populous center, and the old burial grounds are being one after another turned into small parks. In this way, public nuisances are being turned into public blessings.

SYRINGA VILLOSA.—It is said that the leaves of a species of lilac, *Syringa villosa*, are valued by the natives of Thibet in various superstitious practises. Some writers say that its vernacular name is Kum-Bum; but we fancy in America the name would be written Hum-Bug.

SITUATIONS WANTED

Advertisements under this head, not exceeding 50 words, will be inserted once for 50 cents, or three times for $1.25.

GARDENERS: At all times, we have on our register the names of competent gardeners, whom we would be glad to recommend to persons in need of same as being fully competent to take entire charge of any place, either large or small. Gardeners desiring situations should correspond with us. No charge, whatever, is made for any such service rendered. THOMAS MEEHAN & SONS, Germantown, Philadelphia.

GARDENER, desires situation on a private place. Life experience in every branch of horticulture and landscaping. Married, children all grown. Unexcelled references. Thomas H. Geraghty, Newport, R. I.

GARDENER—Situation wanted by a thoroughly practical gardener. Good references from present employer; English, age 38; married, one child. Address "G. J.," care MEEHANS' MONTHLY.

GARDENER—Englishman, age 42, married, no children, successful cultivator of hard and soft wooded plants, fruits under glass and out, vegetables, etc., desires private place; good manager. "J. D." care MEEHANS' MONTHLY.

Send now for a Sample Copy of

The Plant World

An illustrated monthly journal of popular botany, edited by F. H. KNOWLTON of the U. S. National Museum, assisted by a corps of specialists.

In this journal all the interesting facts of plant life are presented in an attractive manner and in language that is strictly

Scientific but not Technical

ADDRESS

WILLARD N. CLUTE & CO.

BINGHAMTON, N. Y.

Alpines

A few suits of 25 to 35 White Mountain plants, mostly alpines from Mt. Washington, for sale at cost of collection. Will be poisoned and carefully labeled. For list and particulars, address,

NEWLIN WILLIAMS

3306 Race Street, Philadelphia

Thomas Meehan & Sons

NURSERYMEN AND LANDSCAPE ENGINEERS

Germantown, Philadelphia, Pa.

Shade Trees of all sizes.
Large and well-developed specimen trees suitable for planting for immediate effect.

Hedges planted, pruned and cared for.

Plans prepared for the laying out and planting of lawns and large private places.

Grading, Roadmaking and all forms of Construction Work.

FLORIDA'S FINEST FRUIT The Pineapple is a curio. Have you ever seen it grow? Single plant 50 cts., two for 75 cents, guaranteed to fruit.

FRED C. THOMAS

Orlando Pineries, Box 394, Orlando, Fla.

NEW CREATIONS IN FLOWERS

If you want to know about them send 10 cents for Mrs. Theodosia B. Shepherd's New Catalogue of Rare and Beautiful California Novelties. Many New Begonias, New Cosmos, Rare Cacti, etc. Offered by no others.

Ventura-by-the-Sea, Cal.

C. G. Van Tubergen, Jr, Haarlem, Holland

CHOICE DUTCH BULBS

ATTRACTIVE BULBOUS PLANTS

CATALOGUES FREE

C. C. ABEL & CO., Sole Agents, Box 920, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

NOW IS THE TIME TO PLANT

TULIPS, HYACINTHS, DAFFODILS,

CROCUS, CHINESE LILIES

And all Other ***SPRING FLOWERING BULBS.***

Our Stock and Assortment is one of the most complete in Philadelphia.

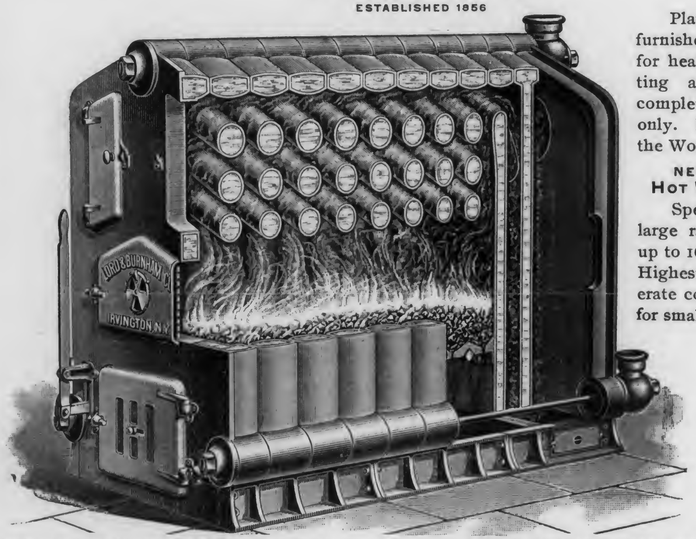
Prices Moderate. *Illustrated Catalogue Free.*

MICHELL'S SEED WAREHOUSE, 1018 Market St., Phila.

LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS AND MANUFACTURERS OF HEATING AND VENTILATING APPARATUS

ESTABLISHED 1856



Plans and estimates furnished on application for heating and ventilating apparatus erected complete, or for material only. Highest awards at the World's Fair.

NEW SECTIONAL HOT WATER HEATER

Specially adapted to large ranges. Will heat up to 16,500 feet of glass. Highest economy. Moderate cost. Also heaters for smaller work.

Send six cents postage to New York Office for latest catalogue of Heating and Ventilating Apparatus.

NEW YORK OFFICE: 160 Fifth Avenue, Cor. 21st St. GENERAL OFFICE AND WORKS: Irvington-on-Hudson, N. Y.

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for **25c.**

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., - - - Boston.

SPECIAL CLUBBING OFFERS

MEEHANS' MONTHLY, GARDEN AND FOREST,	one year, for	$5.00
	renewals,	$6.00
MEEHANS' MONTHLY, GARDENING,	one year, for	$3.50
MEEHANS' MONTHLY, AMERICAN GARDENING,	one year, for	$2.75
MEEHANS' MONTHLY, GARDEN AND FOREST, GARDENING,	one year, for	$6.50
	renewals,	$7.50
MEEHANS' MONTHLY, GARDEN AND FOREST, AMERICAN GARDENING,	one year, for	$5.75
	renewals,	$6.25
MEEHANS' MONTHLY, GARDEN AND FOREST, GARDENING, AMERICAN GARDENING,	one year, for	$7.25
	renewals,	$8.25

Address

THOMAS MEEHAN & SONS, Publishers, GERMANTOWN, PHILA.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

Allegheny Hollyhocks

are a great improvement on this old yet popular plant; flowers being from 5 to 6 inches across, petals all delicately fringed, and colors very varied. We are among the very first to bring out this handsome strain. They can be set out now.

Strong, healthy plants that will bloom next summer, 35c. each; $2.50 per 10

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers Germantown, Philadelphia

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

NOW IS THE TIME TO PLANT

TULIPS, HYACINTHS, DAFFODILS,

CROCUS, CHINESE LILIES

And all Other **SPRING FLOWERING BULBS.**

Our Stock and Assortment is one of the most complete in Philadelphia.

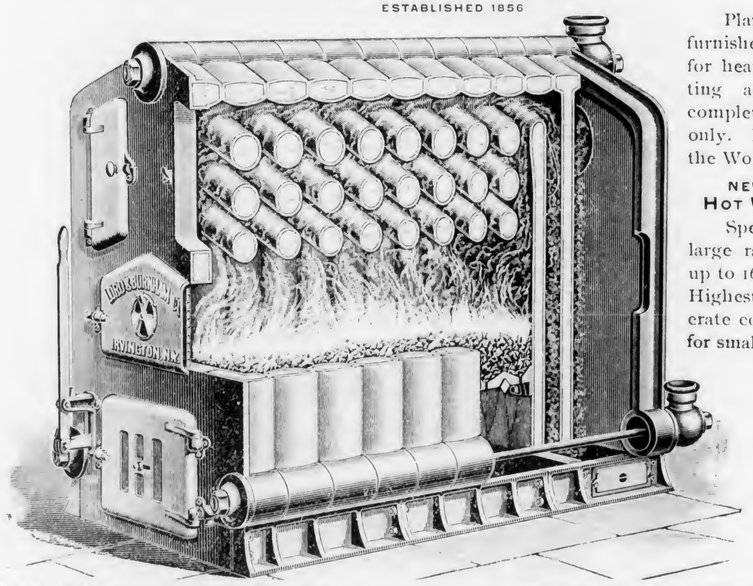
Prices Moderate. *Illustrated Catalogue Free.*

MICHELL'S SEED WAREHOUSE, 1018 Market St., Phila.

LORD & BURNHAM CO.

HORTICULTURAL ARCHITECTS AND BUILDERS AND MANUFACTURERS OF HEATING AND VENTILATING APPARATUS

ESTABLISHED 1856



Plans and estimates furnished on application for heating and ventilating apparatus erected complete, or for material only. Highest awards at the World's Fair.

NEW SECTIONAL HOT WATER HEATER

Specially adapted to large ranges. Will heat up to 16,500 feet of glass. Highest economy. Moderate cost. Also heaters for smaller work.

Send six cents postage to New York Office for latest catalogue of Heating and Ventilating Apparatus.

NEW YORK OFFICE: 160 Fifth Avenue, Cor. 21st St. GENERAL OFFICE AND WORKS: Irvington-on-Hudson, N. Y.

BOWKER'S FERTILIZERS

for HOUSE PLANTS, LAWNS, GARDENS, FARM CROPS.

A book on "Window Gardening," and enough odorless fertilizer for thirty plants three months, sent by mail for **25c.**

Catalogue free. State for what purpose fertilizer is wanted when writing.

BOWKER FERTILIZER CO., - - - Boston.

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

SPECIAL CLUBBING OFFERS

MEEHANS' MONTHLY, GARDEN AND FOREST,	one year, for	$5.00
	renewals,	$6.00
MEEHANS' MONTHLY, GARDENING,	one year, for	$3.50
MEEHANS' MONTHLY, AMERICAN GARDENING,	one year, for	$2.75
MEEHANS' MONTHLY, GARDEN AND FOREST, GARDENING,	one year, for	$6.50
	renewals,	$7.50
MEEHANS' MONTHLY, GARDEN AND FOREST, AMERICAN GARDENING,	one year, for	$5.75
	renewals,	$6.25
MEEHANS' MONTHLY, GARDEN AND FOREST, GARDENING, AMERICAN GARDENING,	one year, for	$7.25
	renewals,	$8.25

Address

THOMAS MEEHAN & SONS, Publishers,
GERMANTOWN, PHILA.

GARDENING

PUBLISHED THE 1ST AND 15TH OF EACH MONTH

BY

THE GARDENING COMPANY

MONON BUILDING, CHICAGO

SUBSCRIPTION PRICE, $2.00 A YEAR—24 NUMBERS

The most practical and valuable American Horticultural publication. DEPARTMENTS: The Flower Garden, Trees and Shrubs, The Greenhouse, The Window Garden, The Fruit Garden, The Vegetable Garden, Insects and Other Pests, Mushrooms, and others in season. See what subscribers say about this valuable journal.

"For condensed common sense in gardening matters, for reliable, unprejudiced and safe information, GARDENING cannot be surpassed, and although moderate in size it expands upon perusal." W. C. EGAN, Highland Park, Ill.

"GARDENING is the best horticultural paper printed in America." CHAS. L. BURR, Springfield, Mass.

"I am greatly pleased with the paper. It is practical and suggestive. Its reproduction of photographic views of plants, flowers and landscapes is a most admirable feature." W. M. JOHNSON, Hackensack, N. J.

"It is a delightful paper and has been very interesting and instructive to me." FRANK HITCHCOCK, Davenport, Ia.

"I have found GARDENING extremely useful and interesting. You have given your subscribers a great deal more than their money's worth." CHAS. E. BROWN, Yarmouth, Nova Scotia

"Such a publication was long needed in this country. Every line of its contributions is a lesson in itself to many professionals as well as to amateurs." JOHN BERRY, Gardener to Senator Wolcott, Littleton, Colo.

"I value GARDENING highly on account of the very practical character of its contents." J. A. PETTIGREW, Supt. Lincoln Park, Chicago

"I regard GARDENING as one of the most practical magazines issued in the interests of horticulture." W. F. MACARA, Waterville, N. Y.

"The paper is the most practical of any I read." W. E. ABBS, Fond du Lac, Wis.

"I subscribe to all the horticultural and floricultural journals on this continent as far as I know and find in GARDENING the most practical one for an amateur like myself." DR. GEO. T. HAWLEY, Corning, N. Y.

Allegheny Hollyhocks

are a great improvement on this old yet popular plant; flowers being from 5 to 6 inches across, petals all delicately fringed, and colors very varied. We are among the very first to bring out this handsome strain. They can be set out now.

Strong, healthy plants that will bloom next summer, 35c. each; $2.50 per 10

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers Germantown, Philadelphia

VOL. X. NO. 463.

GARDEN AND FOREST

A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

JANUARY 6, 1897.

TREATS of the science and the art of gardening, and is a trustworthy record of progress in horticulture. The weekly issues contain practical directions for cultivation under glass and out of doors, correspondence on seasonable topics, editorials and articles on forestry, and on legislation affecting the national forests. The contributors are botanists and specialists of the highest standing. The illustrations are original, accurate, and artistic.

"Winning, delightful, and accurate."—*N. Y. Tribune.*
"Wise, intelligent, entertaining."—*Harper's Weekly.*
"Rich variety of remarkable engravings."—*N. Y. Post.*
"Dignified, pleasing, scholarly."—*Chicago Evening Journal.*
"Foremost journal of its class."—*Boston Herald.*

Beautifully Illustrated. Weekly. $4.00 a Year

SPECIMEN COPY FREE ON APPLICATION

GARDEN AND FOREST PUBLISHING CO.

Tribune Building, New York

WHEN WRITING TO ADVERTISERS, TELL THEM YOU SAW THEIR CARD IN MEEHANS' MONTHLY.

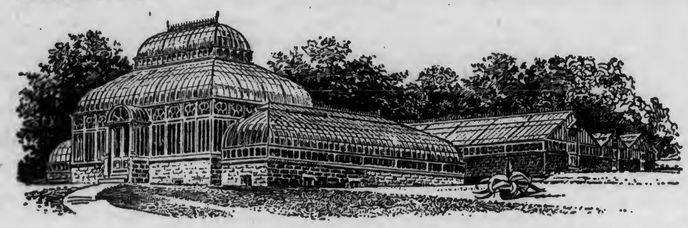
INTENTIONAL SECOND EXPOSURE

HITCHINGS & CO.

ESTABLISHED 50 YEARS

HORTICULTURAL ARCHITECTS AND BUILDERS

and largest Manufacturers of **Greenhouse Heating and Ventilating Apparatus**



The highest awards received at the World's Fair for Horticultural Architecture, Greenhouse Construction and Heating Apparatus.

Conservatories, Greenhouses, Palmhouses, etc., erected complete with our Patent Iron Frame Construction.

SEND FOUR CENTS FOR ILLUSTRATED CATALOGUES.

233 MERCER STREET, NEW YORK CITY

Landscape Engineering

Plans prepared and carefully carried out for Grading, Roadmaking, Planting and the Remodeling of old places ∴ Special arrangements made when extensive work is contemplated ∴ Correspondence solicited.

THOMAS MEEHAN & SONS

Nurserymen and Landscape Engineers — GERMANTOWN, PHILADELPHIA

EDWARD CAMPBELL

LANDSCAPE ARCHITECT AND ENGINEER

ARDMORE, - PA.

Sketch plans and planting maps prepared, and suggestions given for the laying out and improvement of country and suburban residences, public parks and grounds of every description.

Grounds laid out and their construction undertaken by contract or day labor, and carried out under strict personal supervision. The choice grouping and effective arrangement of trees and shrubs has been made a special study. Trees furnished and planted by experienced workmen.

Draining Plans and Surveys. **Fine Crushed Stone for Walks and Carriage Drives.**

HARDY ORNAMENTAL TREES, SHRUBS, VINES, EVERGREENS, AND HARDY HERBACEOUS PERENNIALS, The finest general assortment of Hardy Ornamental Plants in America. Two hundred page illustrated descriptive catalogue on application. Plans and estimates furnished. Send your list of needs for special rates.

THE READING NURSERY, JACOB W. MANNING, Proprietor, READING, MASS.

Modern Horticultural Building.

Elegant Conservatories, Practical Commercial Houses, and all Classes of Greenhouse Structures Planned and Erected.

We build of all Iron, all Wood, or a modification of either, as desired. Steel or Cypress Sash Bars for Butted Glass Glazing or Lapped Glazing, with or without putty. Latest methods of Ventilation, Steam and Hot-Water Heating. Iron and Slate, Iron and Tile, or all Wood Staging. Contracts taken for Completed Structure. Materials furnished to Builders. Expert advice at Residence, or Catalogues on application. ☞ Don't fail to get our Plans and Prices.

PLENTY'S HORTICULTURAL WORKS, 148-156 Randolph Ave., Jersey City, N. J.

WHEN WRITING TO ADVERTISERS, PLEASE MENTION MEEHANS' MONTHLY.

End of Volume